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NEWS SUMMARY

GENERAL

Vietnam strikes into China'

Yemen aid

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Viet hijack

id Bailey guard

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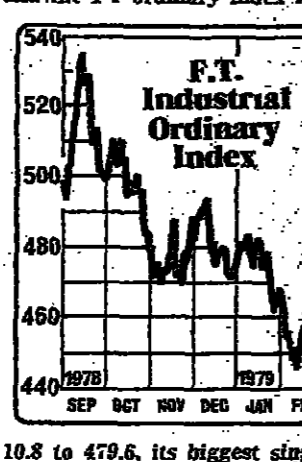
George-Brown

EF PRICE CHANGES YESTERDAY

Table with columns for RISES and FALLS, listing various stocks and their price changes.

BUSINESS

Equities up 10.8; Gold falls \$1/2



STERLING rose 15 points to 64.3

GOLD fell \$1 to \$247 1/2 in London

WALL STREET was 15.33 down at 805.79

TRADED options reached a new high

M.N. the German commercial vehicles

WORLD SHIPBUILDING order book

EEC Industry Commissioner has appealed

OECD has drawn up a voluntary code

BEFAST port is to go ahead with a \$20m investment

CIVIL SERVANTS' unions are totally opposed

ROLLS-ROYCE Board have approved plans

Table with columns for COMPANIES, listing various companies and their performance.

Miners' leaders agree to '9%' coal board offer

BY CHRISTIAN TYLER, LABOUR EDITOR

Miners' leaders yesterday gave the Government its best news of the troubled winter wage round...

Secondly, the Board has put on the table £35m, which it says will be self-financing...

Begin refuses to attend Carter Mid-East summit

BY DAVID LENNON IN TEL AVIV

ISRAEL'S CABINET yesterday rejected President Carter's invitation to Mr. Menahem Begin...

Steel users oppose price rises

BY ROY HODSON

BRITISH STEEL Corporation proposals to raise the prices of many steel products...

Table with columns for CONTENTS OF TODAY'S ISSUE, listing various news items and their page numbers.

Iran oil exports start on Monday

By Kevin Done in London and Simon Henderson in Teheran

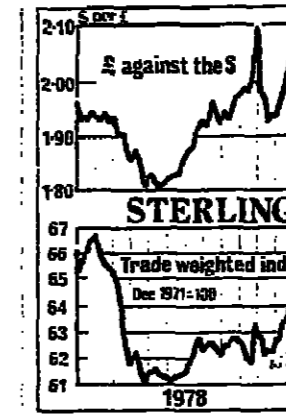
IRAN IS to resume oil exports on Monday, but the first limited sales will be arranged directly by the National Iranian Oil Company...

UK rationing

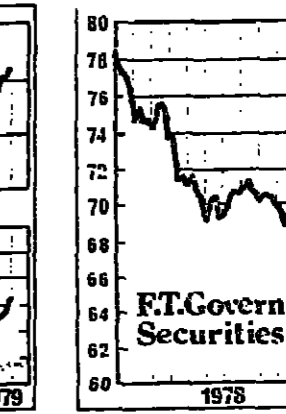
Several UK oil companies have started to ration supplies of oil products...

FFI Eurosterling bond

THE increased overseas interest in gilts has prompted Finance for Industry...



STERLING



FT Government Securities index

Gilts and £ rise sharply

BY PETER RIDDELL, ECONOMICS CORRESPONDENT

PRICES of gilt-edged stocks and equities rose sharply yesterday and sterling advanced against other major currencies...

Iran oil exports start on Monday

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Several UK oil companies have started to ration supplies of oil products...

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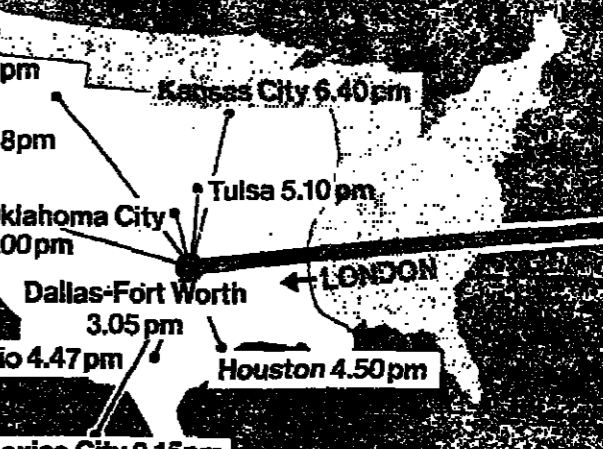
THE increased overseas interest in gilts has prompted Finance for Industry...

Fly the Big Orange.

London to Dallas-Fort Worth non-stop. Daily. It's got all the right connections in America's Big Country.

Braniff's colourful 747 takes off daily from London Gatwick at 11.45am to Dallas-Fort Worth, arriving at 3.05pm.

Here are some sample arrival times:



BRANIFF INTERNATIONAL Mainland USA, Hawaii, Mexico, Alaska, Canada, South America and Europe

Toyota to cut production because of fall in exports

By RICHARD C. HANSON IN TOKYO

TOYOTA MOTOR, the giant of the Japanese motor industry, is paring its production a rather sharply over the three or four months compared with a year ago as exports continue to drop and overseas markets remain high.

The company has forecast a decline of about 10 per cent from levels to around 1.38m a month. The monthly production could, however, be shown to decline of up to 20 per cent by May, while March and April output is used at 15.4 per cent and per cent respectively below a year ago, according to Nihon Shimbun, a leading financial daily.

The problem of the decline in exports became evident in the latter months of 1978 as the impact of the appreciation of the Yen on its exports to the huge U.S. market combined with

the disruption of exports to Iran and a cutback in purchases of cars in Saudi Arabia. It is speculated in the motor industry that Toyota failed to act quickly enough to hold back shipment to the Saudis, and has high levels of stocks in the U.S.

Nissan Motor, the number two car producer, took steps to hold down shipments to the Middle East much more quickly and conducted a successful U.S. sales campaign in December and in January to get rid of 1978 model stocks. Nissan expects that its production for the year will be up, but only slightly, to 2.38m units.

Toyota, hoping that exports will begin to show some recovery by the latter half of 1979, plans to keep production at the 2.88m units built in 1978 (plus about 70,000 knockdown packages).

W. Germany may act to curb price of chemicals

By Adrian Dick in Bonn

THE WEST GERMAN Federal Cartel Office has taken what it sees as preventive action against excessive price increases for chemical products in the wake of recent rises in crude oil-derived feedstock costs.

In a letter to Herr Kurt Lanz, a director of Hoechst who is President of the European Chemical Federation, the head of the Cartel Office, Herr Wolfgang Kartte, warned that public discussion of price increases in the 20-30 per cent range could be an infringement of the Act against limitations on competition.

Repetition of remarks attributed to Herr Lanz by press reports could result in heavy fines, Herr Kartte wrote.

A spokesman for Hoechst said that Herr Lanz had been misreported, and that he had not discussed specific price increases.

Hoechst has not so far expressed any view on the price consequences of steep rises in the cost of naphtha and other feedstocks, but German chemical executives are privately talking about average increases closer to 10 per cent than to the much higher figures quoted in a Press conference which Herr Lanz addressed in Brussels 10 days ago.

Herr Kartte's warning was described by a Cartel Office spokesman as a "shot across the bows" of the chemical industry, influenced in part no doubt by price increases already notified by ICI and other European producers.

World shipbuilding orders slump to 13-year low

By IAN HARGREAVES

THE WORLD shipbuilding order book slumped to its lowest level for over 13 years last quarter as the effects of the four-year-old shipping recession continued.

All of the major shipbuilding countries saw their order books shrink. Meanwhile the industry as a whole was turning out ships during 1978 at almost exactly twice the rate new orders were being received.

The latest returns from Lloyd's Register of Shipping show a total world orderbook of 25.8m gross registered tons at the end of December, compared with 36.7m grt a year earlier.

Almost 60 per cent of this order book is due for delivery by the end of 1979, indicating that conditions are going to continue getting tougher for shipyards for at least another 12 months. Japan retains just over 25 per

cent of the industry's orderbook, with 6.5m grt, but second place is taken by Brazil with 2.8m grt. Brazil's shipyards are to a large extent cushioned against the recession by Government-backed ordering programmes.

Behind Japan and Brazil come the following countries, showing their orderbooks at the end of last year and the figure for one year earlier in brackets—U.S.: 2.6m grt (3.6m); France: 1.5m (2m); Poland: 1.4m (1.5m); Spain: 1.3m (1.5m); UK: 1.2m (2.2m); Sweden: 1m (2.1m); and South Korea: 0.7m (1.1m).

In December, 1977, there were 10.3m grt of oil tankers on order, compared with 6.8m grt at the end of 1978 and 10.7m grt of bulk carriers, compared with 5.9m grt.

In the general cargo classification, however, there was a much slower rate of depletion and at 8.3m grt the end-1978

orderbook indicates prolonged overcapacity problems for this sector of the industry.

A large number of orders for bulk carriers and tankers were converted into general cargo ships as owners sought to avoid outright cancellation when the gravity of the recession became clear.

The countries making the largest additions to their fleets in the fourth quarter of 1978 were the U.S. (1.8m grt), Liberia (1.4m grt) and Norway (1.1m grt).

British Shipbuilders' annual returns, published yesterday, show that the state corporation took orders for only 17 merchant ships of 86,600 grt last year, against completions of 714,000 grt. The orders were valued at £80m, compared with the 1977 order intake of 67 ships totalling 517,000 grt and worth £243m.

Indonesia buys six Airbus

By Michael Donne, Aerospace Correspondent

GARUDA, the national airline of Indonesia, has placed a contract with Airbus Industrie for six wide-bodied A-300 airbuses, with an option on six more. The deal, including spares, is worth more than £125m (\$250m).

Deliveries of the first Airbus will be made to Garuda at the end of 1981 and in early 1982. The order makes Garuda one of the biggest buyers of this aircraft.

It brings total orders from 21 customers to 189 aircraft (130 firm and 59 on option), with commitments for at least another 60 of the smaller A-310 version, involving in all 349 aircraft.

The engines for the Garuda aircraft have not yet been selected. They could be either General Electric, Pratt and Whitney or Rolls-Royce RB-211 powerplants. However, the General Electric CF-6-50 series of engines has been adopted for the Airbus by most customers.

Mr. Wiseko Soenono, president of Garuda, said that the move for the deal would come from a Franco-American banking syndicate, in which French, German and British institutions would be heavily involved.

The Garuda deal will bring more work to the UK, for British Aerospace makes the wings for all the Airbuses, both the A-300 and now also the smaller A-310. Last week it was reported from Amsterdam that further substantial orders for the Airbus are in negotiation, and that by the end of March, the total of firm orders and options for the A-300 would be likely to be over 200.

Nissan in new Swiss sales drive

By KENNETH GOODING IN GENEVA

OCTAV BOTNAR, the man who has built up a million-dollar building sales of Datsun cars in the Swiss market and who has been drafted in to help with a major shake up in the distribution of the Japanese cars.

The reorganisation is being carried out at the instigation of Nissan Motors, second largest Japanese car concern and maker of Datsun vehicles.

The Swiss distribution company has been taken over by a

group of private investors organised by the Swiss Credit Bank which has also taken a shareholding in its own account. Previously the company was owned by a Dutch group.

Since 1972, when Datsun cars achieved 3.3 per cent of the Swiss market and sold 8,500 cars, sales have slipped to 4,500 a year and a market share of under 2.2 per cent. This is "totally inappropriate to our position as one of the world's

big four manufacturers," says Nissan.

Mr. Botnar was asked by Nissan to act as consultant to the new Swiss shareholders. Neither he, Datsun UK nor Nissan have any shareholding in the reorganised Swiss company.

Major executive management changes have been made—the Swiss company is still looking for a new managing director—and Mr. Botnar is concentrating on expanding and improving the Datsun dealership network in Switzerland.

Holland's deficit doubles

By CHARLES BATCHELOR IN AMSTERDAM

HOLLAND'S DEFICIT on foreign trade almost doubled in 1978 following a sharp rise in imports and a decline in natural gas exports. The Dutch trade balance showed a deficit of £1.62bn (£1.5bn) compared with a revised deficit of £3.3bn in 1977, according to provisional figures from the Central Statistics Office.

If unregistered trade with Belgium and Luxembourg is taken into account the overall deficit was even larger, the Economics Ministry said.

British trade with Poland reaches record

By Christopher Bobinski in Warsaw

BRITISH EXPORTS to Poland reached a record £286m last year at a time when Poland is severely limiting hard currency imports.

Figures released by the British Embassy here show that UK exports increased by 33 per cent on 1977 while imports from Poland went up by 19 per cent on the previous year and reached £212m in 1978.

The British export growth is explained by continuing deliveries of equipment to the Ursus tractor factory and the Wloclawek PVC complex, construction of which is being undertaken by British contractors.

The trade figures show that similar large-scale contracts will have to be won in the future if this rate of exports is to be maintained.

Machinery and transport equipment exports rose from £81m in 1977 to £101.4m last year, while metalworking and machinery exports grew from £16m in 1977 to £29.6m last year.

Low growth in UK invisibles

Financial Times Reporter

NET OVERSEAS earnings of major UK service industries should grow by around 5 to 8 per cent in 1979, according to a survey undertaken by the Committee on Invisible Export.

The main reasons for the predicted rise in earnings include a pessimistic view of the real growth in the world economy in 1979 as well as the volume of world trade in services and growing pressure on margins.

The biggest rise is expected by the civil aviation industry. Earnings from inward tourism are also expected to show a healthy rise.

UK urged to invest in services

By MAURICE SAMUELSON

UNITAIN is "obsessed" with a need for investment in manufacturing industry and would pay more attention to investing in services, Mr. Ichiro Matsuo, president of arubeni, one of Japan's biggest general trading companies, said in London yesterday.

Mr. Matsuo was speaking on a second full day of a visit to 100 strong trade mission to explore ways of boosting UK exports to Japan.

Mr. Matsuo, who is leading a mission, said that Japan was concentrating on investment in services and tertiary industry now that the

country had passed the period of its main economic growth.

As he was speaking, other members of the mission, representing Japan and the EEC, have made some progress in their major round of tariff-cutting talks and the shape of a final pact is beginning to emerge, officials on both sides said in Geneva.

Some 62 companies, were visiting various parts of the country. Besides a group examining investment prospects in the UK, it includes

Taiwan quotas

FOLLOWING a rapid rise in imports, a restriction has been introduced on imports into the EEC of knitted trackuits from Taiwan.

Annual quotas for the four years 1979 to 1982 have been imposed by the EEC Commission after representations by the UK and other member states.

The UK quotas are: 1979—130,000 pieces, 1980—165,000 pieces, 1981—182,000 pieces, 1982—201,000 pieces.

Quotas for imports of this product into the UK were not included in the arrangements for textiles and clothing imports by the EEC Commission.

SA urged to use Mozambique line

By QUENTIN PEEL IN JOHANNESBURG

DR. KOBUS LOUBSER, the general manager of South African Railways, has urged South African exporters to consider using the line through Maputo, describing Mozambique Railways as being the most efficient in Black Africa.

He said exports were currently running at 15,000 tonnes a day through Maputo and the ore terminal of Matola, and could be more than doubled in two years to 35,000 tonnes.

There has been some resistance from South African exporters to using the Mozambique route since independence, aggravated by serious delays in handling at Maputo.

SAR officials insist, however, that traffic levels have not declined seriously. Current capacity on the route is 20,000 tonnes a day, major export items including chrome and ferro-chrome, steel, citrus products, asbestos and coal.

THE GOVERNMENT OF IRELAND ANNOUNCES A NEW DEAL FOR MANUFACTURING INDUSTRY

No tax until 1990 then a maximum of 10% for the rest of this century

There has never been a better time to come to Ireland. The current Irish tax system, with its export sales relief scheme, enables manufacturers to qualify for full exemption from tax on all export sales until 1990.

The Government has now announced a new tax scheme that will come into force on 1 January 1981. This new scheme sets a maximum rate of 10% on corporation tax and will be in force right to the end of this century. It means that if a company decides to locate in Ireland now, they will be in the advantageous position of not paying any tax until 1990 on export sales—and then, under the new scheme paying just 10% on all profits until 31 December 2000. It's a unique opportunity...

Act now and get the maximum benefit

REPUBLIC OF IRELAND
The most profitable industrial location in Europe.

Contact IDA Ireland—the Irish Government's industrial development agency. We have offices in London, at 58 Davies Street, London W1Y 1LB. Ask for Hugh Alston at 01-499-8155.

IDA Ireland also has offices in Dublin, Amsterdam, Paris, Cologne, Stuttgart, Milan, Copenhagen, New York, Chicago, Los Angeles, Houston, Toronto, Sydney and Tokyo.

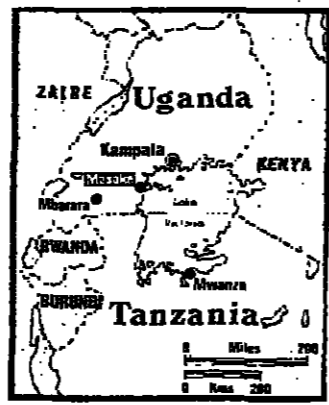
OVERSEAS NEWS

AMERICAN NEWS

Amin 'fighting for his life'

BY MICHAEL HOLMAN IN LUSAKA
Amin, observers believe it is their intention and cite the fact that mediation attempts by the Organisation of African Unity (OAU) are treated with little short of scorn by Tanzania.

Tanzania's role. They believe that a substantial part of the 17,000 strong Tanzanian army is some 40 to 50 miles inside Uganda and has played a vital role in the fight for Masaka and Mbarara.



many of whom have been based in Tanzania. Claims of 'fierce fighting' are regarded as exaggerated.

second hand from Kenya and Dar-es-Salaam, it is not possible to confirm the Tanzanian role. But if correct, President Julius Nyerere has committed his army to involvement in the internal affairs of another state, albeit in response to provocation.

Meanwhile, the cost of the war to Tanzania—officially put at some \$500,000 a day—weighs heavily on one of Africa's poorest states.

The heavy demand on foreign exchange in the form of fuel, equipment and weapons comes at a time when Tanzania is facing a balance of payments crisis.

Sasol could meet half Pretoria's oil needs

By Quentin Peel in Johannesburg
SOUTH AFRICA'S decision to press ahead with an expansion of its Sasol oil-from-coal production has revived the question of just what contribution the process can make to the country's fuel requirements.

Schlesinger warning of fuel rationing by summer

BY DAVID BUCHAN IN WASHINGTON
DR. JAMES SCHLESINGER, the U.S. Energy Secretary, yesterday warned the nation's governors meeting here that compulsory fuel conservation might be necessary this summer, but that petrol rationing did not appear likely at the moment.

He spoke shortly before the White House was due to unveil stand-by measures, including a ban on Sunday petrol sales, a ban on outdoor advertising lighting and a lowering of heating thermostats, which it has sent to Congress for approval.

At present, the U.S. is running short of about 500,000 barrels a day from Iran or about 2.5 per cent of total U.S. oil consumption.

India 'No' to Concorde flights

THE INDIAN government has rejected a British Airways request for permission for regular flights of the Concorde at supersonic speed across the Indian peninsula on its Bahrain-Kuala Lumpur/Singapore sector.

Sanjay gets two years

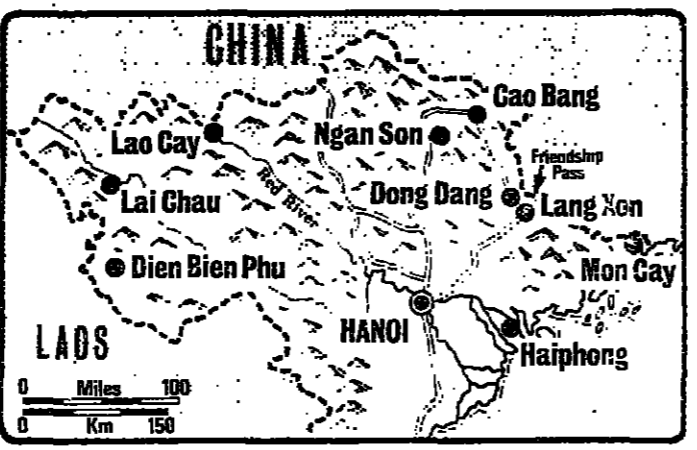
Sanjay Gandhi, son of Mrs. Indira Gandhi, the former Prime Minister, was yesterday sentenced to two years' rigorous imprisonment after being convicted in a case involving conspiracy to steal and destroy satirical film in which the leading character was based on his personality.

Bhutto exasperation

For the second day running the judges in Pakistan's Supreme Court yesterday showed visible signs of exasperation with the senior defence counsel for Mr. Zulfiqar Ali Bhutto, the condemned former Prime Minister, Chris Sherwell writes from Rawalpindi.

CONFLICT IN INDOCHINA 'Vietnam withdrawal' from town controlling strategic crossroads

BY RICHARD NATIONS IN BANGKOK
THE VIETNAMESE withdrew from the town of Lang Non yesterday in the face of a Chinese advance.



At some point the Vietnamese are going to have to throw up a hard line before the Chinese approach the river basin where Hanoi's defence perimeter begins.

Fremantle port strike

All shipping movements in Fremantle were halted yesterday as more than 200 maritime workers decided to continue their strike till next Thursday.

Chad tension rises

Despite a week-old cease-fire between the rival forces of President Félix Malloum and Premier Hissen Habre, tension increased sharply in Chad's capital yesterday.

Canadian capital spending expected to rise 8.9%

BY VICTOR MACKIE IN OTTAWA
CAPITAL SPENDING in Non-residential construction is expected to total \$84.7bn (£22.5bn) in 1979, up by 8.9 per cent from last year.

U.S. investments abroad up by 18% last year

BY DAVID LASCELLES IN NEW YORK
U.S. COMPANIES continued to increase their foreign investment last year, mainly in Europe, according to a report published yesterday by the New York Conference Board, the business research organisation.

Caracas crude price rise still awaited

BY Joe Mann in Caracas
Sr. Valentin Hernandez Acosta, Venezuela's Mines and Energy Minister, made a formal announcement yesterday on the rise of 15 per cent price rise for residual or heavy fuel oil.

AFL-CIO bid to amend wage plan

BY JOHN WYLES IN NEW YORK
THE American Federation of Labour-Congress of Industrial Organisations (AFL-CIO) is continuing to snare at President Carter's anti-inflation policy by seeking substantial amendments to the Administration's real wage insurance programme.

Optimism in India over the long-term growth prospects

MR. CHARAN SINGH, the Janata Party leader recently taken back into the Cabinet as Deputy Prime Minister, presents his first budget today amid promising signs that the Indian economy may be moving towards a higher long-term rate of growth.

happening on any scale. But unless it does, increased food production will only add to the already large food surplus, and agricultural unrest could spread.

drop in exports has raised the possibility of reversion to the aggressive industrial export assistance programme run by the Government until last April.

far more pragmatic in encouraging new private sector investments where additional capacity is needed than its hostility to the large corporations or his desire to encourage the small-scale sector would suggest.



Mr. Charan Singh—first budget

is the first in which, reflecting the current emphasis on decentralisation, over half of total expenditures will be in the hands of State Governments. They have an uneven record of efficiency.

future. His main choice will be whether to attempt to cover the anticipated budget deficit out of higher taxes or through further borrowing.

Handwritten signature or note at the bottom of the page.

"I resign."

"You can't, you're the boss."

Everybody has bad days. Even bosses.

But when you're the boss of a small business, a bad day can get out of proportion.

In a big company, you'd probably be surrounded by experts in finance, sales, personnel, marketing, production and so on.

People you could talk to, argue with,

try your ideas on, blame, have lunch with, confide in and who would generally make you feel better.

But when you're the boss of a small business, you're on your own.

At ICFC we've learnt quite a lot about the growing pains of small businesses.

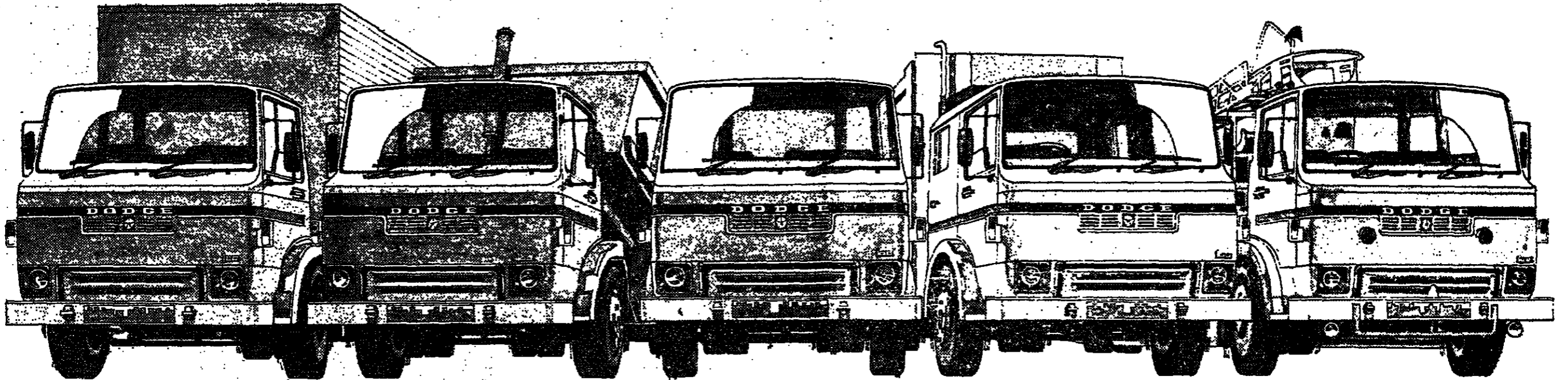
We've helped nearly 5,000 of them over the last 34 years.

And we've usually found that some friendly advice and somewhere between £5,000 and £2 million can brighten up the blackest day.

ICFC

The smaller business's biggest source of long-term money.

Call up the Dodge Commandos. Any time. Any place.



Whatever business you're in, whatever service you have to provide, you must have reliable, cost-effective transport.

A Dodge Commando truck will give you precisely that.

It can actually help cut distribution costs and achieve more efficient delivery operations.

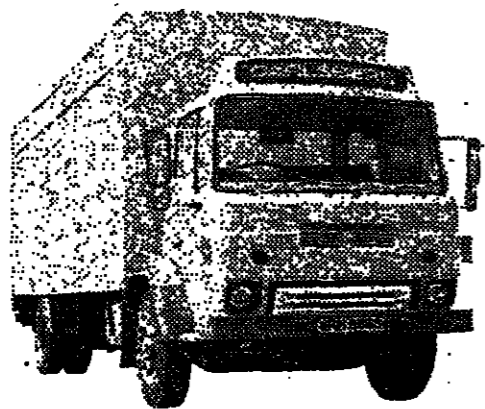
How?

We're not going to back that claim with a long, tedious argument that quotes computerised figures with three decimal places, just to identify the odd penny you might save here and there.

Because we're offering you the opportunity to discover for yourself just how good the Commandos are.

An open invitation to all companies that have never bought a Dodge Commando.

You may well be reasonably pleased with the vehicles you're running now. Or perhaps not.



But in any event, shouldn't you at least give yourself the chance to prove once and for all that you're as happy as you think you are?

Call up the Dodge dealer near you. Ask for a Commando demonstrator. For a couple of hours, or a couple of days. A week, even.

And if a week is not enough, say so. Take the truck away. Try it out on your toughest route.

We promise there will be no obligations on your behalf. Except to return the truck.



And there will be no hard sell from us. Except that, when asked, we will quote a very competitive price. And we also reserve the right to tempt you further with extra-fast delivery.

But the vehicle's appraisal, we'll leave to you. And to your drivers.

However, just in case you'd like some real evidence that Dodge Commandos can cut your transport costs - before you spend a few pence phoning the Dodge dealer - read on.

National fleet operators are calling up more and more Dodge Commandos. Ask them why...

Ask Carlsberg. "It's reliability and economy that are most important to us. Our vehicles clock up a big mileage and the routes covered combine long, fast runs with constant stopping and starting in delivery areas. In our experience, the Dodge Commando G16 is the best truck for the job."

Ask Debenham's. "Since the introduction of Dodge Commandos, our operating costs have reduced

considerably. Their excellent reliability record is confirmed by the fact that time off road has been reduced beyond all reasonable anticipation."

Ask National Carriers. "We've had experience with all British tractors of around 18 to 20 tonnes GCW. And currently, the Dodge tractors satisfy our needs in terms of specification and reliability better than all the others."

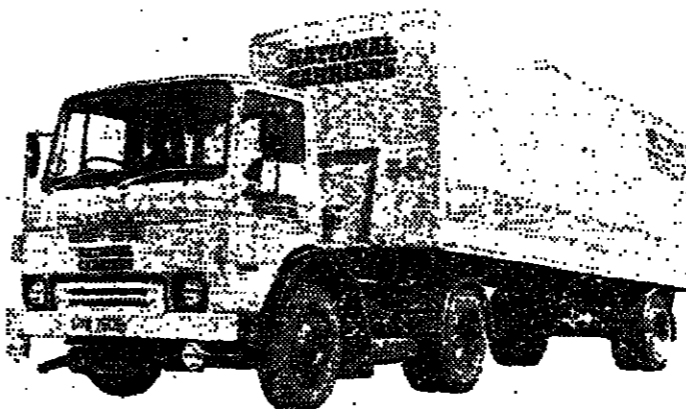
Ask Arrowfast Express, Robirch, Watney Mann, Scot Bowyers, Walls Ice Cream, London Co-op, Weetabix. Ask anyone.

Call up a Dodge Commando. Call one up now.

Dodge Commandos cover the entire weight range from non-HGV 7½ tonnes GVW through to 20 tonnes GCW.

All the rigids offer a wide choice of engines, drivelines, wheelbases and bodies. So you can specify a Commando that delivers the right balance of performance and economy for your operation.

Contact your Dodge dealer. Tell him you want proof that the Dodge Commando is a better truck than the one you're using now. He's ready and waiting.



DODGE COMMANDO RANGE

G08
4x2 rigid, 7.38 tons GVW
Choice of two engines, four or five speed gearbox, single or two speed axle, three wheelbases.

G09
4x2 rigid, 8.5 tons GVW
Choice of three engines, four or five speed gearbox, single or two speed axle, three wheelbases.

G10
4x2 rigid, 9.7 tons GVW
Choice of two engines, four or five speed gearbox, single or two speed axle, four wheelbases.

G11
4x2 rigid, 11.2 tons GVW
Choice of four engines, four, five or six speed gearbox, single or two speed axle, five wheelbases.

G12
4x2 rigid, 12.0 tons GVW
Choice of four engines, five or six speed gearbox, single or two speed axle, five wheelbases.

G13
4x2 rigid, 13.0 tons GVW
Choice of four engines, five or six speed gearbox, single or two speed axle, five wheelbases.

G15
4x2 rigid, 14.5 tons GVW
Choice of four engines, five or six speed gearbox, single or two speed axle, five wheelbases.

G16
4x2 rigid, 16.0 tons GVW
Choice of four engines, five or six speed gearbox, single or two speed axle, five wheelbases.

G18
4x2 tractor, 18.0 tons GCW
Six cylinder in-line turbocharged diesel, five speed gearbox with single or two speed rear axle.

G20
4x2 tractor, 19.68 tons GCW
Six cylinder in-line turbocharged diesel, five speed gearbox with single or two speed rear axle.

Your Dodge dealer will advise you on availability of different engine and gearbox combinations for each model.

Demonstrators are on offer subject to availability. Consult your dealer for full details about all conditions relating to the use of Dodge demonstration vehicles.



DODGE COMMANDO



Now, Canon computerise the copier: Whatever next?



We've always had a reputation for making something which works well, work even better.

Our new NP80 copier is a perfect case in point. Naturally, the NP80 gives you the same high quality copies you've come to expect from any machine carrying the Canon name. But what puts it light years ahead of any conventional copier is its microprocessor. A mini computer in effect which controls all its functions with split-second accuracy. And automatically monitors the system necessary to keep your copies coming out sharp and clear.

The NP80 is reliable too. Because we've employed solid state electronics. So there are fewer moving parts, and therefore less to go wrong.

You'll find we've replaced push-buttons with a touch-sensitive keyboard. And incorporated a special 'user-assist' system to let you know, at a glance, exactly what supplies or attention your machine requires.

We've also given the new NP80 a very fast delivery—and very deep cassettes to cope with it. You'll find it will produce you 28 A4-sized copies a minute (it can take paper up to A3 should you need it), without any warm up time at all. At a cost-per-copy which is very economical indeed. And you might also like to note that if you need a single copy in a hurry, you can interrupt a longer run. The NP80 will then go back to where you left off.

The new NP80 is just one of the whole range of Canon plain paper copiers. Whatever your copying needs you're sure to find one that's exactly right for you.

The first step to taking the next step forward in copiers is to fill in the coupon right now. Then we can tell you all you need to know about the remarkable new NP80.

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THE MANAGEMENT PAGE

EDITED BY CHRISTOPHER LORENZ

Looking for alternatives to family fortunes

MANAGEMENT of family fortunes in the grand manner is no longer a viable proposition, according to Raymond Armstrong. The problem lies in the area of costs, for "grand manner" means not only investing the family cash to provide both security and a good return, but also organising a wide ranging butlering service, arranging anything from long sea cruises to more mundane items like pianos.



Mr. Raymond Armstrong

Armstrong bases his view on long experience at Starwood Corporation, where he has been president for the past ten years. Starwood was formed in the late 1920s to manage the fortunes of the Rosewald family—the late Julius Rosewald was a leading figure in the establishment of Sears, Roebuck, the large U.S. retailing group.

There appears to be no lack of demand for the butlering side of the service—many of the more nouveau riches are only too eager to sample it—but the organisation it requires and the rapidly rising costs involved make it less and less attractive to Starwood itself.

So Starwood has been moving into new areas recently, a trend which is gathering momentum as Armstrong seeks to establish links in Europe. It is not families he is now after, but institutions, such as pension funds, or individuals prepared to put up funds for specific "alternative" investments, as he describes them. Alternative investments are those made outside the stock market as a means of spreading risk.

BUSINESS PROBLEM

Plumber's tax arrears

Some years ago a plumber of ours chose to leave and set up as a sub-contractor, and since then we have virtually used his services full-time. In April 1977 we received our 715 certificate, but because of tax arrears, he could not get one. In October 1977 we realised that he was never likely to get approval and after other disagreements, we ceased to use his services. Between April and October we withheld one third of his salary, about £700. We did this to cover debts of about £700 due to loans made to him to pay off his tax arrears, previous to April 1977. We have now been contacted by his accountant for a F.C. 60 for about £700 for the period April-October 1978.

If we agree to supply an

F.C.60 we are liable for the monies to the Inland Revenue and may be accused of tax evasion by them. We are unlikely to reclaim our debt regardless of our success in court. In view of the specific and short-term nature of the employment, is there any defence we can offer the Inland Revenue and any claim we can make against the total sum? As far as we can deduce the facts, you did not purport to withhold subcontractor's tax from the payments in question; you made payment in full, and simply applied part of the untaxed payments towards the reduction of the subcontractor's indebtedness to the company. You should explain the facts to the subcontractor's accountants, so that they will understand why you cannot issue an F.C.60, and probably the simplest solution is to put the subcontractor's accountants in touch with the company's accountants direct.

Though avoiding involvement in more butlering activities, Starwood is still taking on family fortunes for investments in specific projects. In the past year it has taken on \$50m, which includes the funds of Walter Beardsley, who headed Miles Laboratories, now part of the German Bayer chemicals group.

Some of Starwood's past alternative investments have been somewhat unusual. It owns, for example, the town of Starwood, in Aspen, and has a share in French vineyard, Chateau Bouscaut. In the 1970s it backed the formation of Eamrtheon Press to encourage young authors in Europe—successes there included Dr. Zhivago, by Boris Pasternak.

Armstrong tends to favour a conservative line of investment in stock markets, which policy he claims has enabled the company to outperform many others over the years. Between 1972 and 1977, for example, Starwood's tax-free funds—that is pension funds and foundation funds, which pay no capital gains taxes—achieved an annual compound growth rate of 6 per cent. This compares with the Standard and Poor's 500-stock average of 3 per cent per year.

Starwood's philosophy, says Armstrong, is to get into the stock market when it is thought that the total return (dividends plus capital appreciation) will be higher than the yield on high-quality long-term bonds, and to get out when the bonds appear to be more attractive.

Nicholas Leslie

BY OUR LEGAL STAFF

It is unlikely that you will be penalised for your indulgence towards the subcontractor, but the Revenue may ask for interest in respect of the period between (a) the time when the company should have paid over the tax it ought to have deducted from the gross payments actually made on account of the subcontractor's invoices, and (b) the time when the tax is actually paid by the subcontractor himself. The company's accountants will no doubt advise you to place the facts before the company's tax inspector, so as to make it clear that there was no collusion between the company and the subcontractor.

No legal responsibility can be accepted by the Financial Times for the answers given in these columns. All inquiries will be answered by post as soon as possible.

Sydney Paulden on how a sensitive work-reorganisation scheme was carried out Manpower control without tears

WHEN George Duncan became chairman of Lloyds and Scottish, the Edinburgh-based financing group, a couple of years ago, he initiated great emphasis on manpower development. A new job, Director of Management Services, was created at the group's main subsidiary company, Lloyds and Scottish Finance, to take charge of personnel communications, Organisation and Methods, the staff college and training responsibilities, as well as transport. George Cruickshank got the new job, and the brief: "Make sure our resources are right."

Apart from money, the major resource of a finance company is people. George Cruickshank's priority was to ensure that the company had the right number of right people at the right time. Before he could embark on that, he had to know what the workload was and what it would become as the company continued to grow.

The finance unit had originated in 1947, staffed by seven people at head office in Edinburgh, with four branch offices. By 1977, the staff numbered 1,500 with about 500 at the HQ and over 1,000 distributed amongst 96 branches throughout Britain. "With that kind of growth," says Cruickshank, "you tend not to get time for all the management sciences."

A job evaluation scheme had been initiated by the company's own O and M section, but management had precious little data on which to base any manpower control or any forecasts for recruitment purposes.

Cruickshank convinced the chairman and the Board to invest in setting up systems that would give an up-to-date picture of the work to be done, analysed to provide—unit by unit—a detailed account of the manpower required, and evaluated so that the skills and wage or salary needed for each job could be identified.

Just over a year ago these tasks were put out to tender to consultancy firms. "Some sent in proposals off the top of their heads," recalls Cruickshank, "some sent in ready-made packages from the shelf, but others came in and did some research. We gave the contract to W D Scott and Co, whose experts sat with us for several days before coming up with a suggested approach that could improve things and make savings before making a bid for the job."

Scott's approach was to select nine members of the Lloyds and Scottish Finance staff to be trained in the analysis of office



Mr. George Cruickshank, director of Management Services at Lloyds and Scottish Finance

work and systems. They then investigated the work at head office and in all the branches, with only guidance from two Scott consultants during these operations. As a result, analysis and assessment of the work flow are now going on continuously, conducted by individual Lloyds and Scottish Finance managers, ensuring that things are not allowed to slide again.

"In the first year," claims Cruickshank, "our savings covered the cost of the exercise, by 300 per cent. We are currently handling a throughput of 38 per cent more transactions and have 22 per cent more financial cases on our books, yet our head office staff has been reduced by 14 per cent and our branch staff has risen by only 8 per cent."

Using the rougher yardsticks that were previously employed to gauge staff requirements, Cruickshank can point out that, without the new approach, the company would now have been paying salaries to 24 per cent more people in the branches and an unknown extra quantity of headquarters personnel. Head office work was more difficult to assess and control. We only knew that staff numbers rose relentlessly."

How was this sensitive transition achieved? "The moment that Scott was awarded the assignment, management and the sole union recognised by the company—the National Union of Bank Employees—were informed of the study that was going to be carried out. It was agreed that there would be no redundancies, but any reduction in staff would be achieved through natural wastage. Both sides agreed a redeployment clause, whereby management would be free to move staff from one type of work to another if the analysis highlighted any imbalances in the workload. Candidates were invited to

apply for training as members of the analysis team and eight men and one woman were selected for training. All were given a course on CWIP—Scott's Clerical Work Improvement Programme—and two were also instructed in techniques of job evaluation, as part of the process of setting wages and salaries.

The whole company was then told in detail what the approach was to be. The Board of Management, the area managers and the heads of sections were addressed by the consultants and by the management services personnel and were introduced to the new team of analysts.

The clerical workers were then issued by the team with work diary sheets, broken down into 15-minute bands. The employees were asked to log the main tasks they carried out during the day. The team used reference books in order to calculate how long each task should take and the manpower that was required to achieve this total of tasks.

George Cruickshank emphasises that the intention of the exercise was not to make the employees overwork. "There were generous personal allowances built into all our calculations for breaks, amounting to about one hour per person per day." This is in addition to the lunch break.

The job evaluation operation was carried out simultaneously. A committee of five was set up to hear appeals against any contested job description and assessment, comprising two union representatives, two local management representatives, and a chairman from senior management. Jobs were graded for rates of pay.

In each section and in each branch, the local managers worked with the study team so that they could fully understand the approach, and appreciate the

savings. August, for example, was always a big month for car financings, with the new annual registration number. Instead of staffing to accommodate this peak, a number of clerical operations not so sensitive to timing were either brought forward or delayed in order to leave personnel free to handle the car rush.

In some sections, "new business" paperwork had always been handled by a separate staff to that handling existing customer accounts. By studying the workflow, it was found that in many offices five interchangeable clerks could comfortably carry out all the tasks for both types of work, where previously there had been two teams of three people each.

The monthly CWIP reports are now providing information as Manpower Audits, greatly simplifying the personnel function for George Cruickshank and providing a wealth of data to assist management control and planning. On each manpower audit sheet there is a hierarchical chart naming all the personnel in the branch or department concerned. Each name has three numbers below it, indicating age, years served with the company and years served in the current position. Cruickshank's own chart, for example, shows him as 42/17/7, indicating he is 42 years old, has been 17 with Lloyds and Scottish Finance, and has been a director of management services for two years.

"This information is invaluable," he says, "for noting, well in advance of any crisis, which people are coming up for retirement age, so that a likely replacement can be spotted in good time. It shows us which key people may be suffering from job stagnation, so that we can give them a change or a step up before their feet get too itchy."

Not only has the scheme paid for itself in cash economies, but it is contributing to more effective management, making it possible for the managers to plan ahead and giving them time to keep the interests of their staff well in mind.

By analysing the actual work and the time it required, a re-arrangement of operations and personnel was able to achieve substantial immediate

The unsecret of our success. Saitama Bank advertisement featuring a tree illustration and text about international financial services.

ENGINEERING COMPANIES. A unique opportunity to develop key managers. EITB advertisement for fellowships in management and training development.

In 100 years, we haven't been able to improve on one teaching aid. Berlitz advertisement featuring a globe illustration.

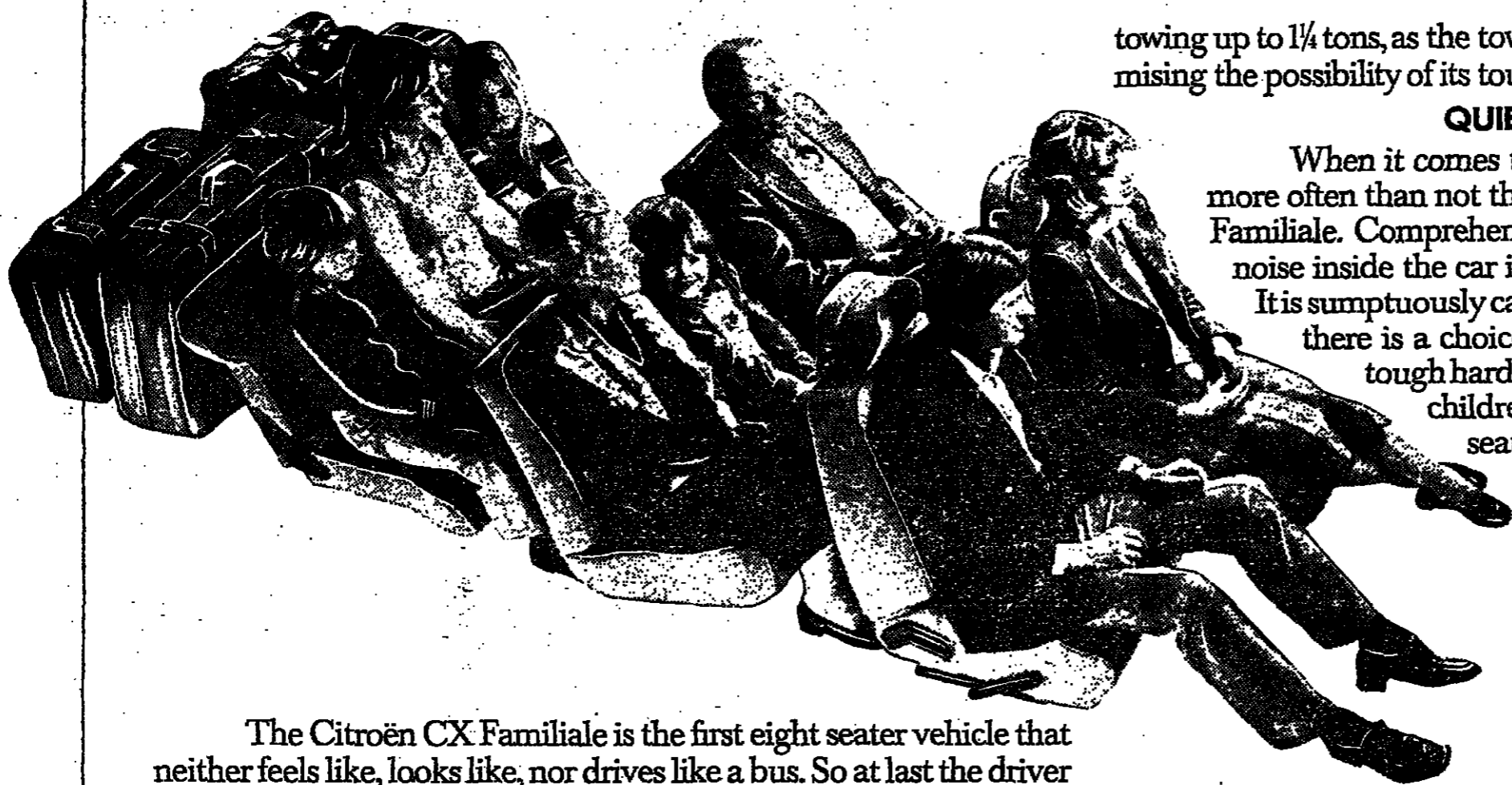
You learned your first language with the help of a very special teaching aid. Berlitz advertisement describing language learning methods.

Solid Fuel Advisory Service, Sotheby's Belgravia. GREAT STOVEVERI advertisement for an exhibition of 150 antique stoves.

The Company Membership Plan provides WORLDWIDE MEDICAL ASSISTANCE TRAVELLING OR WORKING OVERSEAS advertisement.

Handwritten Arabic text at the bottom left of the page.

CITROËN INCREASE FAMILY ALLOWANCES.



The Citroën CX Familiale is the first eight seater vehicle that neither feels like, looks like, nor drives like a bus. So at last the driver who on occasion needs a large passenger carrying capacity has a civilised and economical alternative to either a second car or public transport.

PASSENGERS OR PARCELS?

The Familiale's seating is arranged in three rows. Two bucket seats in the front row, three individual bucket seats in the second row and a bench seat for three in the back row. And it is a pleasant surprise to discover that all the seating is of the same exceptionally high standard that has made CX a byword for comfort.

Of course if all the seating were fixed and static, the Familiale's carrying capacity would not be used to the full most of the time.

So the entire back row folds flush down to the floor and allows the Familiale to be turned into a five seater estate car instantly, with greatly increased luggage space.

A TOUGH CUSTOMER.

Seats apart, the Familiale is identical to its stablemate, the CX Safari Estate. Those who are familiar with the Safari will know just what good news that is. But for those of you who don't, it means that you can load well over half a ton into the Familiale, arrange it any way you wish, and still the car will remain level. As a result roadholding remains outstanding whether the Familiale is fully loaded or not.

This, of course, is due to Citroën's unique hydropneumatic suspension. All four wheels are independently suspended, and height correctors automatically adjust to ensure the car remains at a constant height from the road. This system makes for a superlatively comfortable ride even over the roughest roads. The self-levelling aspect of hydropneumatic suspension also ensures trouble-free

towing up to 1¼ tons, as the tow-bar is kept at a constant height, minimising the possibility of its touching the road on sharp hills and dips.

QUIETLY DOES IT.

When it comes to interior refinements, estate cars are more often than not the poor relation. This is not true of the Familiale. Comprehensive soundproofing ensures that any noise inside the car is due almost entirely to its occupants. It is sumptuously carpeted throughout, and for upholstery there is a choice between luxurious jersey cloth and tough hardwearing Boxline, ideal for sweet loving children and mud loving dogs! The front seats recline fully and have adjustable detachable headrests. The driver's seat is also height adjustable.

VariPower steering is standard, making the Familiale a completely effortless car to park even in the most confined spaces. But VariPower also has a unique advantage over other power steering systems.

The steering gets progressively firmer with increasing feel as the Familiale goes faster, so long distance high speed cruising is much less tiring.

Another relaxing feature for the driver is the imaginative yet sensible fascia layout. All the instruments and the comprehensive array of warning lights can be seen at a glance and immediately understood through the distinctive single spoke steering wheel.

A TOUCH OF CLASS.

Performance too, puts the Familiale into a totally different class. Top speed is a swift 108 mph. Getting there is simple, especially with the optional C-matic transmission. Yet petrol consumption is quite extraordinarily low for such a big car. For example, you can confidently expect to achieve 30.7 mpg (9.21/100 km) at a constant 56 mph (90 km/h).*

SAFETY FIRST.

There are safety features in abundance. Fully-powered disc brakes always ensure full braking efficiency. Both front and rear ends are energy absorbing, helping to prevent damage reaching the rigid passenger compartment. In harness with its surefootedness, these features make the Familiale one of the safest cars ever seen on the roads of Britain.

A word of reliability. Underneath the Familiale's classic lines is a ruggedness of construction easily the equal of that found in its uglier competitors. Major services are only required every 10,000 miles. In addition, like every CX imported into Britain, the Familiale is given an extra thick underbody seal to keep the British climate out.

All in all, the Familiale is arguably the best family car you can buy. Because, with its uniquely flexible seating arrangement, it can take on any number of shapes and sizes. Just like families.

CITROËN ^ CX FAMILIALE



CX 2400 SUPER FAMILIALE (ILLUSTRATED) £6241.
CX 2500 DIESEL SUPER FAMILIALE £6591.
CX SAFARI 5-SEATER ESTATES, 2400 SUPER £6128, 2500 DIESEL SUPER £6481.

*SIMULATED URBAN DRIVING 18.5 MPG (15.5 L/100 KM) CONSTANT SPEED DRIVING 75 MPH (120 KM/H) 22.2 MPG (12.7 L/100 KM). PRICES INCLUDE CAR TAX VAT AND INERTIA REEL SEAT BELTS, BUT EXCLUDE DELIVERY CHARGES (£76) AND NUMBER PLATES.
OPTIONAL C-MATIC TRANSMISSION PETROL ENGINES ONLY £305. PRICES CORRECT AT TIME OF GOING TO PRESS. ALL CITROËN CARS HAVE A 12 MONTHS UNLIMITED MILEAGE GUARANTEE. PLEASE ENQUIRE ABOUT OUR PERSONAL EXPORT FINANCE AND C-MATIC SCHEMES AND PREFERENTIAL FINANCE SCHEME. CHECK YELLOW PAGES FOR THE NAME AND ADDRESS OF YOUR NEAREST DEALER. CITROËN CARS LTD, MILL STREET, SLOUGH SL2 2SE. TEL. SLOUGH 35817

Prudence at County Hall

BY COLIN JONES

FOR ALL the criticism of the minority of persistent big spenders among local councils, there has never been any real danger of British local authorities getting into the kind of financial pickle that faces New York, Cleveland, Tokyo and some Italian cities...

Opportunity

The decision was moreover the final step in a policy which has been gradually evolved by both Labour and Conservative administrations.

TV Radio

- BBC 1: 7.05-7.55 am Open University (Ultra high frequency only)...

F.T. CROSSWORD PUZZLE No. 3,909

Grid for crossword puzzle No. 3,909 with clues for across and down words.

SOLUTION TO PUZZLE No. 3,908 with a grid and corresponding words.

THIS MAY seem an odd moment to be busy with ordering dower-balls and tubers. I have only just seen my first crocus...

Reliable buys

If you want to make them up cheaply with all annual flowers, get a move on. The longer you wait, the more expensive they will be...

Tragus in bid for fifth win

IN SPITE of the absence of Dramatist, this afternoon's Surrey Novices' Chase over two miles at Lingfield has the makings of an absorbing race...

RACING

- LINGFIELD: 2.00-Norfolk Downs** 2.30-Alpenstock*** 3.00-Roller Coaster***

- BBC 2: 6.40-7.55 am Open University, 10.20-Charbar, 10.45 Paroli, 11.00 Play School...

Preparing for a late summer lift

and shrinking, put earth round them now and keep them quite You should not simply forget them as you may be about to lose the lot...

GARDENS TODAY

BY ROBIN LANE FOX

Which, though, are best? I strongly prefer the big starchy flowers of the cactus class and the smaller double ones of the pompon to the shaggy double sorts which are generally sold as "decorative"...

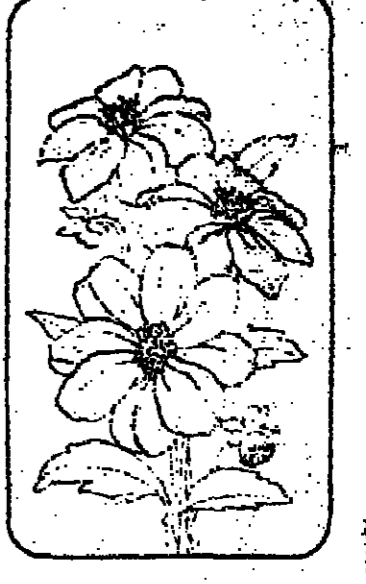
ENTERTAINMENT GUIDE

THEATRES: LYRIC THEATRE, CC 01-417 8588, EVR. 8.00, Thurs. 3.00, Sat. 5.00, 8.00...

CINEMA: ABC 1 & 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28

Park-bedding

Among tall yellows, pioneer has taken the prizes, not undeservedly. Watch out for a long-stemmed one called promise...



The single-leafed dahlia—a delight in the garden you need to plant in your orders now for planting in May

From experience, I prefer these fine varieties to the bags sold as bargains in chain stores in late spring. Breeders have gone wild with the dahlia, so it is stupid to ignore their recent results...

ENTERTAINMENT GUIDE

CINEMA: ABC 1 & 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28

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FINANCIAL TIMES SURVEY

Wednesday February 28 1979

Airliners

THE NEW GENERATION

Firm orders for more than 700 jet airliners worth over £8.5bn were placed by the world's airlines last year. This trend of re-equipping the civil aviation fleets is expected to add more than 4,000 new airliners throughout the world by the early 1990s.

Orders start to flow

GROWTH IN world civil aviation is now gathering momentum. While estimates for the expansion into the 1980s vary widely, it is generally accepted in the world's airline and aerospace manufacturing industries that passenger traffic is likely to grow at an average of about 7 to 8 per cent a year, with cargo expanding at a slightly higher rate. This is rather lower than the growth experienced in the mid to late 1960s, but it is nonetheless sufficient to give the world's airlines and aerospace manufacturers some considerable problems, not forgetting also airport owners and other aviation authorities. But the expansion is likely to be patchy, with higher annual growth being experienced in some of the developing countries of the Third World than in the already highly-developed air transport regions of Western Europe and North America, notwithstanding the stimulus to travel being generated in those latter areas by cheaper fares. One of the reasons for the aviation industry's confidence

in continued expansion is that many countries in the Third World have recognised that development of air transport offers one of the quickest routes to economic growth. Another factor is the undoubted expansion in tourism which is taking place worldwide, to the extent that in many countries it has already displaced business travel as the main source of air passenger traffic.

But there could be some constraints on this growth. Fears of a new oil crisis, and higher fuel prices, may damp down some part of the demand. The ability of the world's airlines, aerospace manufacturers and the ground infrastructure to cope with a sustained expansion at this level may itself prove inadequate—for example, as a result of limitations on airport capacity in some countries, and air traffic control and navigational difficulties in others—and this may serve to curb the rate of expansion. The inability of ground-based hotel and transport facilities to cope with ever-increasing numbers of tourists, and even the determination of some countries to restrict the inflow of tourists in a bid to prevent what is already being called "tourist pollution," may also serve to curb the anticipated rate of expansion.

Growth

There may also be industrial and economic difficulties in some countries which will affect air travel development, although it is fair to point out that even in the UK last year, when economic growth as a whole was at a low level, the growth of air

passenger traffic at the seven major airports run by British Airports Authority amounted to 15 per cent, or some 40m passengers. But, short of another major international upset such as the oil crisis of late 1973, with its subsequent economic difficulties in many countries, the world aviation industry is confident that the 1980s will see at least a steady expansion in demand for air travel.

Translating this into terms of airliner demand is one of the most difficult tasks confronting the world's aircraft manufacturers. Estimates of airline spending throughout the 1980s vary widely, from about £40bn for about 4,000 airliners of all kinds up to about £80bn for some 6,000 airliners. The emphasis is on the development of new short-to-medium range transports, because it is on the shorter routes that most of the world's airline passengers currently travel, and where the growth is likely to continue to occur, notwithstanding the current expansion on long-haul routes as a result of cheaper fares. The cheap fares routes is lagging behind that on long-haul routes, and when it comes, as it now shows signs of doing, it may not be so extensive as on the long-haul routes, but still sufficient to encourage a higher rate of expansion than at present.

But it is not just the growth of air travel itself which is creating the demand for the new generation of airliners. The explosion in travel demand has come, fortuitously for the aircraft-builders, at a time when one of the major civil aviation develop-

ment—the so-called "first jet age"—is coming to an end, and another is about to begin. For more than 20 years, the first generation jets have served the world's airlines well. But they are now ageing. This in turn coincides with the need both to improve fuel consumption to meet the remorseless rise in fuel prices, and costs of all other kinds, and to reduce noise levels to meet increasingly stringent legislative and other controls, imposed by governments in response to intensify-

This Survey was written by Michael Donne, Aerospace Correspondent

ing pressures from environmental groups around airports and beneath flight paths.

These environmental pressures have been most intense in the sophisticated air transport regions of Western Europe, North America, Japan and Australasia, but they are now spreading rapidly throughout the world so that the airlines have no alternatives but to buy quieter, and more fuel-efficient, aircraft. Coupled with rising costs in other directions, the inevitable result has been pressure on the manufacturers to study new areas of technology designed to make flying cheaper (or at least to keep pace with rising costs), and to make it quieter. Hence, the new generation of jets, some of them "wide-bodied", such as the European A-300 Airbus, to enable each flight to carry more passengers, but some of them also perpetuating the existing "narrow-

bodied" concept, such as the Boeing 737.

Because of the high costs of developing new airliners and engines—roughly anything up to £1bn can be spent on a new wide-bodied engine/airframe combination—the number of new types of engines and airframes emerging is comparatively few, with the emphasis upon seeking evolutionary rather than revolutionary changes in design.

Another significant development is the growth of inter-

national collaboration—best evidenced by the partnership of the UK, France, Holland, Spain and West Germany in the European Airbus Industrie consortium, and that between Boeing, Aeritalia of Italy and the Japanese Civil Transport Development Corporation on the Boeing 787 twin-engine "semi-wide-bodied" airliner.

The emphasis in the new generation of jets is on the short-to-medium haul category. Among the new types already in service on these routes or on the way are the European 230-300-seat A-300 Airbus, and its smaller 200-seat version the A-310, competing with the new U.S. Boeing 767 twin-engine jet; and its smaller partner, the Boeing 737. In the medium-to-long range field, there are comparatively few new developments. Boeing intends to continue evolving its 400-seat 747 Jumbo jet, with plans for new

variants to meet a wide range of requirements, while McDonnell Douglas is expected to announce soon plans to "stretch" its DC-10 airliner so as not to leave Boeing with the long-range markets all to itself. Lockheed is also offering the TriStar in a variety of models, but is concentrating on its long-range derivative of the TriStar, the Dash 500.

In the smaller category of medium-to-short-haul jets of the 100- to 150-seat size, where big markets are expected to emerge in the future, Boeing is already dominant with its 727 tri-jet and 737 twin-jet, and it is already studying possible improvements to both models so as to meet any competition that may emerge, for example, from the planned Super F-28 of up to 130 seats, and the prospective Joint European Transport (JET) programme from Airbus Industrie. Below the 100-seat level, the market remains wide open, with only the four-engine British Aerospace BAe 146 feeder-liner under development, although this is likely to encounter competition from both the Super F-28, and perhaps also from four-engine turbo-propeller feeder-liners like the new Canadian de Havilland Dash Seven, which is steadily carving a niche for itself in world markets.

One feature of the emerging market is a renewed interest in many parts of the world in propeller-driven airliners, not only for fuel economy but also noise reasons. This is enabling manufacturers like Fokker to maintain its F27 Friendship twin-engine aircraft production line, while British Aero-

space is also doing steady business with its Type 738, both of which have been in service for many years.

As with airframes, so with engines. High costs are precluding more than a handful of new developments, and here also the emphasis is on evolution, rather than revolution, with the major manufacturers—Rolls-Royce, and General Electric and Pratt and Whitney, both of the U.S.—concentrating on developing "families" of engines from initial basic concepts such as the RB-211, the CF6 and JT9-D series. There are some exceptions, such as the new RB-432 of about 18,000 pounds thrust from Rolls-Royce, and the CFM-56 of 24,000 pounds thrust from the Franco-American (Sneema-General Electric) company, CFM-International.

Fierce

With markets of such magnitude waiting to be won, and a limited number of contenders, the battles for business are proving fierce. For the re-equipment tide that is beginning to flow is likely to be the last for 20 years or more, before the mid to late 1990s. Whoever fails to get a share of the markets now opening will be relegated to the backwoods of the international airframe and engine business for the rest of this century. There can be no question of an airframe or engine builder waiting too long before jumping into the arena, despite the heavy investments involved.

For the re-equipment tide is likely to be short and sharp—the bulk of the orders for the next generation of airliners is

likely to be placed over the next three to five years, (as evidenced by some of the big orders placed by U.S. airlines last year), followed by a steady but unspectacular topping-up of the fleets through the 1980s. Some of the initial orders may appear to be small—for five to ten aircraft a time—but they are significant in that they represent a commitment by the airline concerned to that specific type of airliner. An order for five airliners now means perhaps 20 or even 30 or more in the fleet by 1990, depending upon traffic growth. Thus, the battle is not so much to capture immediately massive contracts but to secure airline commitments to specific airframes and engines that will ensure steady business for 20 years or more.

One result of this activity throughout the world's civil aircraft and engine industries is that a shortage of skilled labour is rapidly emerging. Boeing, with its 767 and 737 programmes expanding, hired 10,000 more workers last year, and will hire more in 1979, bringing its Seattle payroll to over 75,000. Aerospace companies in the U.S. have begun to look abroad for their labour, and the UK industry, as in the early 1960s, is finding itself under pressure from the U.S., where pay is higher, working conditions often more congenial, and where there is the likelihood of programmes continuing through long production runs lasting many years. Not least among the problems of the UK industry, and of the developing Airbus Industrie consortium in Europe, is to convince skilled labour that they can offer the correspondingly long-term security of employment.

There is only one modern jet that can generate regional traffic profitably.

The new Fokker F28.

Great where others are too big.

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Europe puts its faith in the Airbus

OUTSIDE BRITISH Aerospace itself, one of the biggest single manufacturers of civil airliners in Europe is now Airbus Industrie, the international consortium created specially to build the 250-300 seat twin-engine A-300 Airbus, and which is now also developing the smaller 200-seat A-310 version. Airbus Industrie is a "Groupeement d'Interet Economique," or a pooling of common economic interests under French law. Its participants include Aérospatiale of France, Deutsche Airbus from West Germany (which in turn includes Messerschmitt-Bölkow-Blohm and VFW-Fokker), Fokker-VFW of Holland, CASA of Spain and British Aerospace of the UK, with the latter building the wings for the A-300 and now to be responsible for the wings for the new A-310.

Airbus Industrie has experienced a remarkable success with the A-300 (which is powered by U.S. General Electric CF6-50 series engines), with total sales of 140 aircraft to 22 airlines, with options on another 83 aircraft. Of these, 59 aircraft had been delivered by end January. In addition, at that time there were also commitments, awaiting contract signature, for 60 of the new A-310s, from Lufthansa, Air France, Iberia, Swissair and Eastern Air Lines of the U.S.

Last year was particularly successful for Airbus Industrie, with new orders for 70 aircraft and 27 on option—with total business worth about £1.5bn. The organisation hopes for a similar volume of new business in the coming year.

It bases this belief on forecasts that over the next 15 years, to the early 1990s, world air passenger traffic is likely to triple in volume, with a bigger share being taken by the countries of the Third World. This in turn will generate a demand for about 4,350 short-to-medium range jet airliners, worth about \$45bn, of which about 70 per cent will be needed to meet traffic growth, and the rest to replace ageing existing equipment.

Airbus Industrie further estimates that by the early 1990s, demand for aircraft of the A-300 type could reach 1,200, with a

similar number of 200-seaters also being needed. Of this demand, about half is likely to be generated outside North America.

Airbus Industrie's own ambition is to win at least one-third of this market, in competition with U.S. manufacturers, or between 800 and 1,000 aircraft. It believes this target to be realistic, because its existing 20 customer-airlines alone will have a total requirement for 350 A-300s by the early 1990s, and the organisation expects to be able substantially to broaden its customer base in the years immediately ahead. In addition, the five airlines which currently hold commitments on the 60 A-310s are likely between them to need at least the same number again, so that on the present customer base alone, Airbus Industrie can foresee a demand for at least 450 A-300s and A-310s through the 1990s.

Expanding

To meet rising demand, Airbus Industrie is expanding its rate of production from two aircraft a month at present to three a month by the end of 1979, and further to four a month by the end of 1980. Beyond that, depending upon demand, it could raise production further to between eight and ten aircraft a month by 1984.

Airbus Industrie sets particular emphasis on the decision by the UK Government to re-enter the consortium with a 20 per cent stake from last January 1. While Britain was originally a member of the group, formal UK Government participation was withdrawn in the late 1960s, in the belief at that time that the Airbus was not likely to be a commercial success. It was left to Hawker Siddeley Aviation (now part of British Aerospace) to stay in the A-300 programme as an "associate" on a private-venture basis, building the wings for that aircraft. But the growing success of the Airbus, coupled with the clear indications of an upsurge in world demand for new airliners, could not be ignored. After much heart-searching

throughout last year, on whether or not to join Boeing in developing that company's 737 airliner, it was decided to seek readmission to Airbus Industrie, to help develop the new A-310 wings, while continuing to work on the A-300 wings. The division of participation in the consortium is now: Aérospatiale 37.9 per cent, Deutsche Airbus 37.9 per cent, British Aerospace 20 per cent, and CASA of Spain 4.2 per cent, with Fokker-VFW of Holland continuing as an associate.

So far, Airbus Industrie has spent about \$500m on the development, tooling and initial production of the A-300. It estimates that the investment by the French and West German governments in that aircraft will have been reimbursed when 360 aircraft have been sold. For the A-310, the estimated development cost is about \$400m, and the consortium will need to sell at least 300 of this version to recoup these costs. On present sales performance, the group is confident it can reach these figures, particularly since it believes that the biggest surge in equipment buying by the world's airlines has yet to be seen.

The basic Airbus Industrie product-line of "new-generation" airliners comprises five versions of the A-300—the B2-100 which is the basic short-haul version now in service; the B2-200 special "hot and high" airfield version, also now in service; the B4-100 which is the basic medium-haul version, also now in service; the B4-200 transcontinental model with a range of 3,100 nautical miles, which is due into service this spring; and the G4, a derivative of the B4 with an upper-deck cargo door, due into service in the spring of 1980.

In addition, the new A-310 is being offered in two versions—the Series 100, which it is claimed will be the lowest-cost wide-bodied jet airliner for short-haul operations, and the Series 200, which is the medium-range version, both intended to enter service in the spring of 1983.

Beyond these, Airbus Industrie has plans for other new types of aircraft, including the



A-300 Airbuses in the final fitting out area (called the "Abreuvoir," or cattle trough) at Airbus Industrie's Toulouse, France, factory, where Airbuses are assembled from parts shipped from all over Western Europe and the U.S.

B-11 which would be a four-engine, long-range aircraft, and the Joint European Transport (JET) programme for an airliner seating variously between 130 and 160 seats. So far, no decisions on either of these programmes have been taken. Airbus Industrie is still studying trends in the world market, and it is not yet convinced that it is time to spend valuable resources on aircraft for which the potential is still unclear. But it believes that by the end of this year, the trends will have clarified, and only then will it take decisions to launch one or another of these programmes, or perhaps even both.

This does not imply that Airbus Industrie is not continuing design work on either of these possible ventures. Indeed, the JET programme is already one of the most extensively researched ventures in the world. But it is one thing to conduct studies and another to

commit funds to a specific design. But it is clear that, if any JET venture becomes desirable, it is within the scope of Airbus Industrie to do it. It now seems certain that this organisation will become increasingly the "chosen instrument" of the British, French and West German Governments for the development of any major new civil airliners for the rest of this century, other than perhaps any second-generation supersonic airliner and ventures in the smaller category, such as 100-seaters and below. Airbus Industrie has now become one of the world's major manufacturers in its own right and its stature is growing at such a pace that it must now be regarded as the focus of European "big airliner" development.

Fokker of Holland, however, does not share Airbus Industrie's current reluctance to develop a new airliner in the smaller category, and it is now well advanced with its plans for what it calls its Super F-28, a 115-130 seater which is destined

to become the successor for the current successful F-28 Fellowship twin-jet airliner. It is intended to be on the market by 1985. The Super F-28 has reached the stage where Fokker will be conducting market research, with visits to some 20 airlines throughout the world, including a number of existing F-28 operators, while it will also be seeking risk-sharing partners on the programme. Depending on the results of these activities, Fokker hopes to be able to reach final programme definition phase by the third quarter of this year, with a go-ahead before the end of the year.

The Super F-28 is designed for high-frequency short-to-medium haul, and for operations from airports with stringent noise regulations, short or semi-prepared runways, and from airports with minimal ground facilities. The new airliner will be powered by two "new generation" engines—with the Rolls-Royce RB-432 under consideration. It is clear that the Super F-28, with its ability to carry up to

130 passengers over distances of up to 1,500 nautical miles, will provide severe competition for any Joint European Transport (JET) programme emerging from Airbus Industrie in this category. The Super F-28 is also likely to meet competition from Boeing, with the improved 737 short-haul twin-jet, and also from the British Aerospace BAe 146 four-engine feederliner, now under development.

Fokker also intends to continue production into the 1990s of its existing smaller 44-66 passenger twin-turbo-propeller airliner, the F-27 Fellowship, of which it has now built more than 670 over the past 20 years, making it one of the most successful airliners of all time. The market for airliners of less than 100 seats in size is a large one, world-wide, and in recent months there have been signs of renewed interest in these smaller types of transport, especially for twin-turbo-propeller regional and "commuter" type operations. Fokker is still building the Fellowship at a rate of two a month, which could be increased if demand justified.

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Soviet strength still a mystery

THE SOVIET UNION has always been self-sufficient in civil airliner design, development and production. Since the end of the Second World War, while there have been various attempts to sell the Soviet Union Western-built airliners, these have not been successful. The same applies to engines. While the Soviet Union itself not so long ago began to show considerable interest in the latest generation of "big thrust" jet engines, such as the Rolls-Royce RB-211 and U.S.-built powerplants, at about the time that Soviet interest in big, wide-bodied airliners also began to grow, no sales have been achieved, probably as much for political as for technical reasons.

But that the Soviet Union has a big civil-airliner manufacturing capability is self-evident. Aeroflot, the State-owned airline, last year is estimated to have carried well over 100m passengers throughout the Soviet Union and internationally, and in the past 30 years or so the big "design bureaux" with famous names such as Antonov, Ilyushin, Tupolev and Yakovlev have maintained a steady stream of transports, some of them clearly with military as well as civil tasks in mind, but some of them also clearly resulting in long "production runs," such as the Tupolev TU-134 short to medium-range transport, the TU-154 medium-to-long range trijet, and the four-engine Ilyushin IL-82 long-range jet.

The Soviet Union has also moved into supersonic civil aviation, with the four-engine TU-144 airliner, nicknamed "Concordaki" by some for its broad similarities with the Concorde design.

Precise statistics of Soviet civil airliner production are not published in the West. But on the basis of the sheer size of Aeroflot itself, it seems likely that total output over the past 20 years or so of jet airliners alone runs to many hundreds of aircraft, and that production plans for the 1980s must be geared to maintaining, and even increasing, this to meet the expanding requirements of Soviet internal air transport.

The TU-144 supersonic airliner appears to have suffered technical problems, although the "crash" of one of the prototype aircraft at the Paris Air Show in 1973 was due more to an attempt to make the aircraft do what it was not designed to do than to any failure of basic engineering or

design. But it is a fact that although regular scheduled passenger services were begun in late 1977 between Moscow and Alma-Ata (earlier flights had been with freight and mail), these were halted in mid-1978, and do not appear to have been restarted. There have been almost no reliable reports in recent months as to when the airliner will come back into regular passenger service. The TU-144 is thus now well behind the Concorde, which began its own regularly scheduled services in January, 1978 and which has maintained and expanded its operations steadily since then.

Quality

But although the TU-144 itself may have run into technical problems, there can now be no doubt whatsoever about the overall high quality of Soviet aerospace engineering. Any industry that can produce military aircraft such as the MIG-25 Foxbat orbit manned space-capsule around the earth and conduct successful unmanned, long-distance interplanetary probes, as well as produce airliners in quantity such as Tu-134s and Tu-154s must be of just as formidable capability as that of the U.S.

There is no doubt, from a close study of civil aircraft sent to the Paris International Air Show at Le Bourget over the past decade or more (one of the major methods available to the West of assessing just what progress is being made in the Soviet aerospace industry) that engineering and design techniques have improved considerably, as well as the quality of the basic manufacturing. The Soviet Union is also not afraid of innovative design techniques, as evidenced by some of its giant helicopters seen in recent years, such as the Mil Mi-10 Flying Crane demonstrated as far back as the 1961 Soviet Aviation Day display at Tushino, Moscow, and the more recent giant V-12 transport helicopter.

The most significant new civil transport aircraft for the 1980s now under development in the Soviet Union is the four-engine Ilyushin IL-86 wide-bodied, short-to-medium range airliner, which, when it enters service later this year, is expected to be able to carry up to 350 passengers over distances of about 2,500 nautical miles. This makes it broadly equivalent to the basic versions

of the McDonnell-Douglas DC-10 and Lockheed TriStar, although it is larger than the European A-300 Airbus.

The IL-86 has been under development since the early 1970s, and reports from the Soviet Union suggest that it is intended to enter service with Aeroflot some time later this year, and certainly in time to carry visitors to and from the Soviet Union for the 1980 Olympic Games in Moscow.

There are three prototypes, of which the first, CCCP-88000, made its maiden flight in late 1976. The aim since then has been to complete at least 1,200 hours of flight testing before deliveries for airlines service are begun. The first production IL-86, CCCP-88002, which is also reported to be the third prototype, flew in October, 1977. The prototype aircraft was first shown to the West at the Paris Air Show in 1977, when it was seen to be of broadly conventional design, with the four Kuznetsov NK-36 jet engines (each of about 28,860 lbs thrust) slung on pylons under the wings, like the Boeing 707 and 747. This represented a change from the original preliminary design of the aircraft, which when shown in model form in Moscow in 1972 had its engines mounted at the rear of the fuselage, like the earlier IL-62 four-engine jet.

Reports have suggested that one of the new ideas in the IL-86 is that the passengers should be able to carry at least light baggage aboard for storage in the lower fuselage deck, before climbing up to the main passenger deck.

No indications have been given of the total volume of production of the IL-86, but it seems likely that not less than 100 will be required by an airline as large as Aeroflot, and maybe eventually many more will be built. The IL-86 is clearly intended to become the work-horse of the Aeroflot trunk routes, and its range appears to be adequate to cover a substantial part of Aeroflot's network non-stop. It has been suggested that the IL-86 may also be used by the Soviet Air Force as a troop transport.

So far, no export sales efforts appear to have been made outside the Soviet bloc for the aircraft, but it seems likely that once the IL-86 has entered service with Aeroflot, and has met that airline's immediate needs, efforts will be made to sell it to the airlines of the Soviet satellite countries. So

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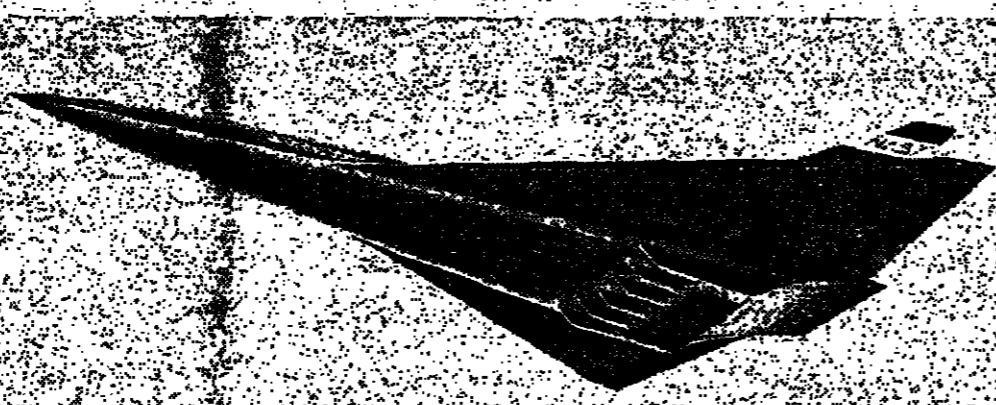
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AIRLINERS—THE NEW GENERATION III

Ambitious U.S. programmes

THE UNDOUBTED preponderance in the development of the new generation of jet airliners is Boeing of the U.S. Already the biggest single manufacturer of jets in the world, Boeing during 1978 won firm orders for no less than 478 aircraft making that year the best yet for the company. All the signs are that the coming year will be just as good, with a continued heavy inflow of orders for its existing range of 747 Jumbo jets, 727 three-engined medium-range jets and 737 twin-engined short-haul airliners, and hopefully also a substantial build-up of customers for the two new airliners on offer, the 757 narrow-body twin-engined airliner, intended to carry up to about 200 passengers over distances of 2,300 miles, and the bigger "semi-wide-body" twin-engined 787, also designed for payloads of between 200 and 252 passengers over distances of 2,500-3,000 miles.



The shape of the future? Early design work for an airliner burning liquid hydrogen fuel instead of kerosene obtained from oil, is being done by Lockheed of the U.S. The aircraft, of which an artist's impression is shown here, would be able to carry 200 passengers from London to New York in under two hours with a cruising speed of 4,000 mph. Construction, however, is not yet proposed.

Although both these new airliners were announced only last year, Boeing has won orders for 84 of the 757s (United 30, American 30, Delta 20, and Pacific Western 4) with options on another 81 aircraft from those four airlines and another customer, Interlease. Boeing has also won orders for 49 787s, including 19 from British Airways and 21 from Eastern of the U.S.

Customer

Features of both the new airliners are their international contents. Boeing is offering the 757 with a choice of engines from all three major engine-builders, Rolls-Royce, Pratt and Whitney and General Electric. So far, both Pratt and Whitney and GE have won orders from 757 customers, but Rolls-Royce is still fighting hard.

Among new customers thought likely to buy the 757 are Air Canada, KLM, Holland and Northwest Airlines of the U.S. Air Canada, already a major user of Rolls-Royce RB-211 engines in its fleet of Lockheed TriStars, can be considered a likely customer for the same engine in any 757s it may buy.

For the 737, however, Rolls-Royce appears to be in a much stronger position, for another version of its RB-211 engine, the Dash 535, has been selected as the "lead engine" for the aircraft for both British Airways and Eastern Air Lines. Further contracts for the 737 with the Dash 535 are in negotiation.

Boeing has also signed agreements with two foreign companies to help develop the 757—with the Civil Transport Development Corporation of Japan (a consortium of Japanese aircraft manufacturers and component suppliers) and Aeritalia of Italy. The CTDC will build body panels and doors, wing-to-body fairing assemblies and main landing-gear doors for the 757, with Mitsubishi Heavy Industries, Kawasaki Heavy Industries and Fuji Heavy Industries all involved under sub-contracts from the CTDC. These three companies already produce parts for other Boeing airliners. Aeritalia will build portions of

the 757-wing and tail. Many U.S. companies will build other parts of the new airliner. Boeing's ambition is to win orders for more than 1,000 aircraft of each type, securing production through into the early 1990s. First flight of the 757 is planned for the summer of 1981, with deliveries in mid-1982. The 737 flies late in 1981, or early 1982, with deliveries in early 1983. Boeing's investment on the 757 is estimated to amount to about \$750m, and that on the 737 to about \$500m largely because some parts of the 757, including parts of the fuselage, will be derived from the existing 727, while the 737 will be all new.

As with all Boeing aircraft, the eventual aim is to produce a "family" of jets. Potential future models include a three-engined aircraft, called the 777, which would have both medium-range and eventually long-range, while another variant could be a smaller twin-engined model for very short-ranges. In both instances, Boeing recognises that it could be straying into the existing Lockheed and McDonnell Douglas trijet markets and perhaps also biting into its own future markets for 737 short-range jets. But the fact that it is studying all the available options indicates that it does not intend to allow itself to be caught napping by the opposition through the 1980s.

Improvements

This is also evidenced by the fact that, while it is concentrating on its two new-generation jets, Boeing is also planning improvements in its existing product range. With 445 Jumbo jets already sold, of which 359 have been delivered, the company is actively seeking new orders, and is also planning new versions of the aircraft that through the 1980s could improve its range and payload performance, perhaps eventually taking it up to 750 or even 1,000 seats. Similarly, with 1,645 727s and 688 737s sold to date Boeing has set up what it calls a "product development group" to study potential major improvements to both aircraft, as well as possible special versions of them. The aim is to ensure that both the 727 and 737 remain

fully competitive throughout the 1980s with whatever new aircraft emerge from competitors—such as the projected 115/130-seater Fokker Super F-28, which would be competitive with the 737, and any Joint European Transport (JET) programme for a 130/160-seater airliner which would be competitive with the 727. Headed by Mark Gregoire, formerly head of 737 marketing management, the new group will concentrate on ensuring that the 727 and 737 keep pace with developments elsewhere in the 100/150-seater class of aeroplanes, and at the same time try to put the 727 and 737 ahead if possible. Mr. Gregoire says his group will look at possible engine changes, major wing changes, body stretches and the advanced aerodynamics and structures going into the 737 and 727 ventures "to see if their use on current products could be cost-effective." Boeing is also studying the possibility of re-engineing the 707 (940 sold) with the Franco-American CFM-56, and will test-fly the engine this year.

McDonnell Douglas, according to president and chief executive officer Sanford N. McDonnell, is anticipating that over the next 10 years, between \$5bn and \$10bn-worth of airliner orders will be booked annually by the U.S. aerospace industry, a total of close to \$100bn for the decade as a whole.

The company is basing its long-term plans on two major models—the existing DC-10 trijet medium-to-long-range aircraft, and the DC-9 twin-engined short-to-medium range airliner, with derivatives of both to expand the family of jets on offer, while it is also still considering the possibility of a new airliner, the Advanced Technology Medium-Range transport, the ATMR, to fill the gap in the broad 140-160 seat range.

The emphasis, however, on the DC-9 and DC-10 families stems from the company's already exceptional success with these aircraft. Throughout 1978, the inflow of orders was such that production of both DC-9s and DC-10s is now sold out through to mid-1981, with orders still flowing in. During 1978, the company received

orders for 43 wide-bodied DC-10s, compared with 29 in 1977, and at the end of the year, the company had firm orders for 318 DC-10s, and conditional orders and options for 47 more, bringing the overall total to 365 aircraft, of which 283 had been delivered. Firm orders for 66 DC-9s were received last year, bringing total orders by end-1978 to 922, which with conditional orders and options for 33 others raised total orders to 1,025 aircraft, of which 893 had been delivered.

The current emphasis in the company is to extend the DC-10 family of airliners, by "stretching" the fuselage to enable more passengers to be carried. Two such stretches are envisaged, one of 26.7 feet, which would raise the payload from the present 275 to 353 passengers, and the other of 40 feet, which would raise the payload to 393 passengers. The company has been discussing these plans with airlines for some months, and responses have been good. But the company has been holding off, to make sure it has a sufficient number of airlines for a go-ahead. It hopes to make up its mind by the spring.

The other major area of interest for McDonnell Douglas at this time is in the DC-9 twin-engined airliner, where for some months it has been offering the stretched "Super 80," now under development. By the end of 1978, nine airline customers had placed orders for 50 Super 80s.

Competitive

Beyond these two aircraft families, there is the possibility of developing the ATMR 140-160 seat aircraft, perhaps in collaboration with the European Airbus Industrie consortium, or with British Aerospace independently.

The point here is that, having abandoned its DC-X-200 and dropped out of the battle for the 200-seater market, which it believes to be too competitive with such aircraft as the Boeing 787 and Airbus Industrie A-310 already deeply committed, McDonnell Douglas sees a big market emerging in the 140-160 seater area, for an airliner with improved technology in both airframes and power-plants. While ATMR has been heard of, the ATMR in recent months, it would be wrong to assume that it is dead, and much more may be heard of it during the remainder of 1979.

What does seem clear at this stage is that, with heavy financial commitments on the stretched DC-10 and on the Super 80 DC-9, McDonnell Douglas is not likely to commit itself to developing any ATMR-type aircraft on its own. It would prefer to collaborate with a foreign manufacturer, and its preference is for Europe, although Japan is not ruled out.

The third of the big U.S. jet airliner builders, Lockheed, is concentrating on its TriStar three-engined aircraft, using Rolls-Royce RB-211 engines, with total sales of 264 (196 firm orders and 71 options). Its philosophy is that, instead of devising new and expensive models, a substantial market can be won by continually incorporating improvements in technology. The TriStar is available in a number of variants of which perhaps one of the most significant is the Dash 500 extended-range version, capable of carrying between 246 and 300 passengers over distances of more than 6,000 miles non-stop, using the most powerful version of the RB-211 engine, the Dash 524. One of the advanced technology developments that is being incorporated on the Dash 500 TriStar is the flight-management system that will help to programme flights that the airlines using the Dash 500 (including British Airways) will save a lot of money. This system, which uses an on-board computer to control every detail of a flight from take-off to touch-down, including performing the navigational tasks, will save as much as 8 per cent on fuel on a typical London-Bahrain flight, or some 680 gallons or over £200. Thus, over a year's flying, it could save an airline millions of pounds in a fleet of Dash 500s.

Soviet mystery

CONTINUED FROM PREVIOUS PAGE

far as Western countries are concerned, the competition from the existing major manufacturers, Airbus Industrie, Boeing, Lockheed and McDonnell Douglas, must be regarded as such that the Soviet Union will have an almost impossible task in trying to win orders for the IL-86.

The other new transport aircraft of which much more is likely to be heard during the 1980s is the Yakovlev Yak-42, a three-engined aircraft (Lotarev D-36s, each of 14,200 lbs. thrust), mounted at the rear of the fuselage. The aircraft is intended to carry between 100 and 120 passengers over distances of up to 1,000 nautical miles, which makes it essentially a short-range aircraft. But a feature of the design, is its ability, with short take-off and landing, to use rugged and unprepared airfields and grass airstrips, serving remote communities throughout the Eastern and Northern areas of the Soviet Union, so that it is essentially a "feeder liner" as well as a local-service "community-linker" in its own right.

It is reported that at least three versions of the aircraft are planned, a 100-seater with carry-on luggage facilities for local-service routes, a 120-seater with baggage holds for minor trunk lines, and a convertible version that can be used as a freighter as well as passenger aircraft. The in-service date is said to be 1979.

The Yak-42 will probably become one of the most widely

used airlines in the Aeroflot fleet. Up to 2,000 aircraft of this type are needed throughout the Soviet Union, to replace ageing piston-engined and turbopropeller equipment which has been the mainstay of the feeder-liner and local-service routes for many years. The basic design objectives of the Yak-42 have been simple construction, reliability and economy in operation, and ruggedness for operations in a wide variety of physical and climatic conditions.

If offered for sale to the West at a reasonable price, and with an adequate guarantee of spare provisioning and long-term maintenance, it could become a competitor to feeders-liners currently under development, such as the British Aerospace BAe 146 or the Fokker Super F-28.

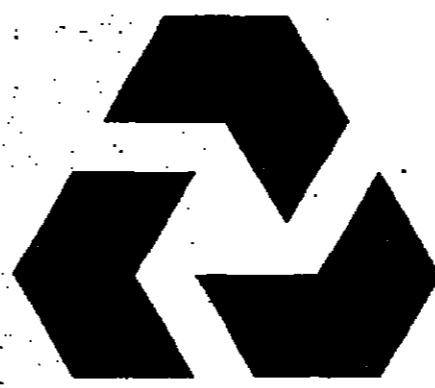
Efforts

But the Soviet efforts to sell airliners to the West in the past have never been very successful despite the fact that the Soviet Union has taken a number of its latest civil aircraft to every Paris Air Show for years. The reason seems to be that the will for salesmanship is lacking. Aircraft on display at Show after Show have been firmly fenced off and locked against prying Western eyes and there has been a marked lack of willingness on the part of Soviet aerospace officials to give away information about their airliners. This has resulted not only in Western observers being unable to get all the details they

need, but also a lack of interest on the part of airlines who can get more than enough information on rival Western products with no problems whatsoever.

It remains to be seen what the Soviet Union will bring to this year's Paris Air Show at Le Bourget in June. But if there is any serious intention on the part of the Soviet Union to sell its new airliners to the West through the 1980s, it will have to make major efforts soon, for the competition is formidable, and growing.

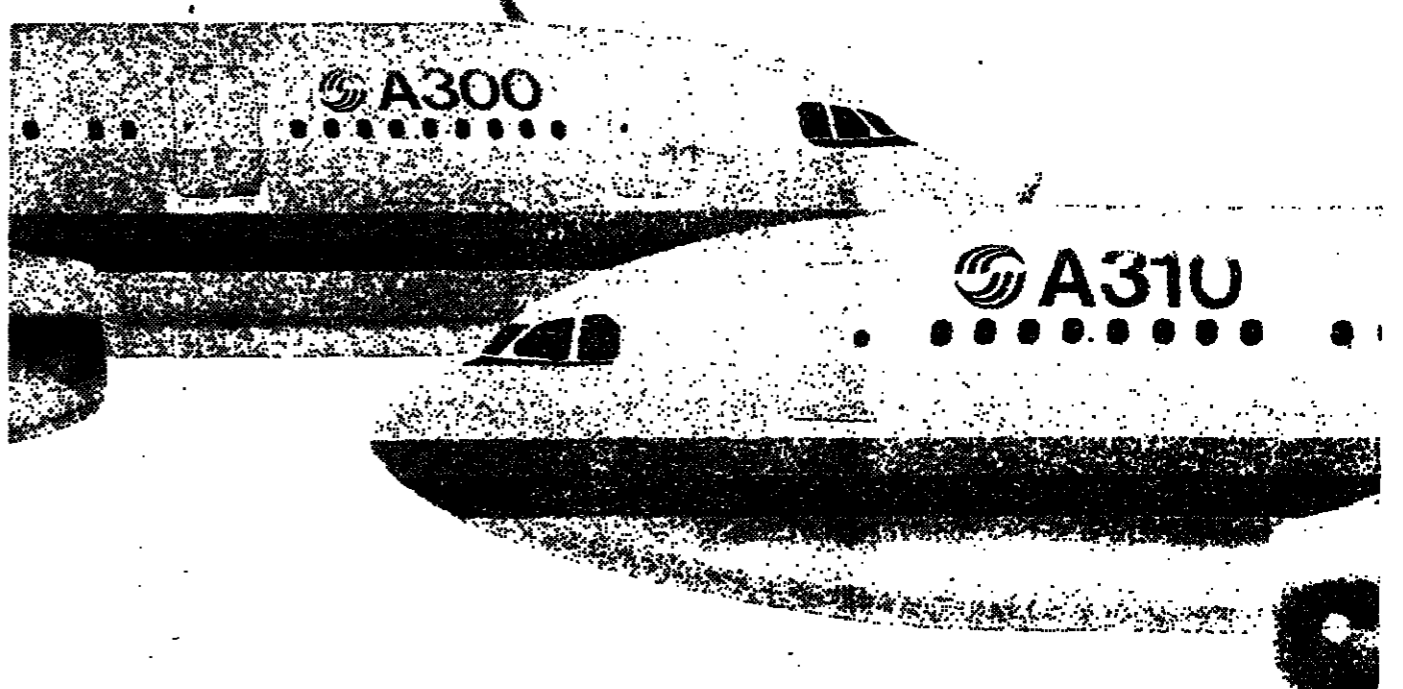
In the meantime, the Soviet Union's long-distance airliner operations are being conducted by the Ilyushin IL-62 four-engined airliner, of which various versions have been introduced since the aircraft first entered service with Aeroflot in 1967. Like Britain's VC-10 airliner, the IL-62 has its four engines mounted in pairs on either side of the rear fuselage. A developed version of the airliner, the Model M, with higher-thrust engines and a long-range fuel tank in the tail-fin, appeared at the Paris Air Show in 1971, and last year another variant was announced, the Model MK. This, although dimensionally unchanged, has a greater maximum weight, to enable up to 195 passengers to be carried over long distances. Well over 125 IL-62s of various versions are reported to have been built, and the aircraft is in service not only with Aeroflot, but also the airlines of Czechoslovakia, Poland, East Germany, Communist China, Romania and Cuba.



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Airbus Industrie

AIRLINERS—THE NEW GENERATION IV

UK faces a testing year

THE COMING year will be vital for the civil aircraft side of British Aerospace (BAe), the nationalised UK aircraft manufacturer. During the corporation will be getting under way on several new ventures designed to fill the gaps created by the rundown and completion of earlier programmes (such as Tridents and Concorde), and to secure its future in the expanding world markets of the 1980s.

These ventures cover a wide spectrum of the range-payload spectrum. They include not only the wings for the wide-bodied A-300 Airbus and now also its smaller 200-seat partner, the A-310, but also work on the new BAe 146 four-engined feeder-liner; possibly a new version of the One-Eleven twin-engined airliner, in a bid to keep this aircraft in production through the 1980s against intensifying competition from other short-haul twin-engined airliners; a new version of the smaller twin-turbo-prop Jetstream light transport; and continued evolution of the 748 twin-turbo-prop feeder-liner.

So far as the A-300 and A-310 are concerned, UK participation on wing design, development and production is expected to involve at least £250m through the 1980s, with an initial payment of £50m. The formal UK Government re-entry from January 1 into the European Airbus Industrie consortium also opens the way for participation in other new developments, such as the so-called Joint European Transport (JET) programme for airliners of below 160 seats. So far, no precise venture in this latter broad area have been defined, but studies have been and are still being undertaken.

It is hoped that before the end of 1979 market requirements will have clarified, and a European programme will begin to emerge. An integral part of these studies is into the availability of engines. The possibilities include the proposed Rolls-Royce RB-432 and the Franco-U.S. Snecma-General Electric CFM-56.

Critical

The coming months will be particularly critical for the BAe 146, a programme originally begun in 1974 but halted because of deteriorating world economic conditions, and only revived last year. While considerable interest has been shown, British Aerospace will need firm evidence that it is likely to sell, so as to justify the long-term investment in the venture of as much as £250m. No orders have emerged so far.

The aircraft is aimed, however, at a market that BAe believes will yield sales by 1990 of up to 250 aircraft, plus an-

other 100 in a military version. The aircraft is being built initially in two versions, the 146-100 seating 70-90 passengers, and the larger 146-200, seating 83-109 passengers. First flight is planned for late 1980, with first deliveries in 1982. The jet engines will be supplied by Avco group of the U.S., which is also building wings, while Saab of Sweden, is also involved building the rear fuselage.

The new Jetstream 31 light transport was launched late last year. Already U.S. operators are showing interest in this twin turbo-prop aircraft as a potential "commuter-liner," and it is understood that several options have been taken out by three operators. The first prototype is due to fly late this year, with first deliveries in 1981. The aircraft is being launched at a time when commuter airliner business in the U.S. is booming with scheduled traffic in this field up 17.4 per cent last year.

The twin turbo-prop Type 748 airliner is also benefiting from this reviving interest in smaller, quieter, fuel-efficient airliners. During 1978 British Aerospace won new orders for 16 of these aircraft, bringing total sales to 339—of which 85 per cent have been for export—and production is scheduled to continue at a steady rate into the 1980s. It is possible that the French Navy may buy up to 12 aircraft for navigation training, paratroop dropping and maritime reconnaissance tasks.

Agreements

One of the biggest programmes at British Aerospace has been the One-Eleven twin-engined jet airliner, of which to date 227 have been sold, worth about £390m. The corporation is now closely studying plans for continued development into the 1980s.

British Aerospace teams have been in Romania recently to settle details of the licence manufacturing agreements signed in principle last summer. These envisage a phased programme of manufacture and assembly in Romania of complete One-Eleven aircraft (both in the Series 500 seating up to 119, and the Series 475 seating up to 89), covering about 80 aircraft. The first three aircraft will be assembled at the Hun factory of BAe, and the UK will then supply to Romania kits of parts for the next 22 aircraft. Meanwhile, authorisation has been given by BAe in the UK for the manufacture of another eight aircraft, to bring total production to 235, with material being ordered for further aircraft beyond that.

Sales efforts are continuing world-wide, and further developments of the aircraft may emerge in the near future.

This is essential if the One-Eleven is to continue to compete not only with existing twin-engined types such as the Boeing 737, the McDonnell Douglas DC-9 and the Fokker F-28, but also derivatives of those aircraft now either in development or production, or envisaged for the future.

Business and executive jet aircraft are outside the main scope of this survey, but British Aerospace is putting considerable emphasis on continued success with its Type 125 executive aircraft, of which 425 have been sold to 29 countries, including 244 in North America. A new version, the Series 800, is being studied, perhaps with the new Rolls-Royce RB-401 engine, designed specifically for a new generation of business jets.

Contribution

The Series 800 would have a new "advanced-technology" wing, and probably also a redesigned fuselage, to seat up to 10 passengers in an executive model and up to 19 in a high-density version. It would have a greater range, over 3,000 nautical miles.

Collectively, all these ventures represent British Aerospace's contribution to the world's civil markets for the immediate future. Other new ventures may emerge, such as the JET, but if all the activities currently envisaged prove successful, British Aerospace will have a substantial workload throughout the 1980s. It is already seeking more skilled labour to meet what it foresees as a major expansion in its civil production capacity.

There remains the question of supersonic airliners. All 16 production Concorde originally authorised will have been built by the end of this year, and the programme has been run down so far that it is unlikely that there will be any more of this generation of aircraft, even if new orders were to emerge for Concorde beyond the five still awaiting sale.

So far there has been no enthusiasm outside the aerospace industries of Britain, France and the U.S. for any second-generation supersonic airliner, and even inside those industries it is recognised that any such development to have any chance of success, would have to be a tripartite venture, with the full financial support of governments. It is also recognised that any such development would be unlikely to enter service much before the mid to late 1990s, and even that would require a start around the mid-1980s.

Research studies have been under way on a low-key basis inside British Aerospace and McDonnell Douglas of the U.S. for some time, with both Boeing and Lockheed also maintaining an interest, but no-one believes



An A-300 Airbus in the colours of Thai Airways International of Thailand

that any significant development is likely to emerge in the near future, if only because all the manufacturers will be too preoccupied financially and technically with meeting the requirements of the new subsonic era now beginning.

One of the most promising of the new UK generation of airliners is a small 30-seat "com-

muter" aircraft, from State-owned Shorts Brothers and Harland of Belfast. Officially designated the 330, this is a twin turbo-prop aircraft, with a wide-bodied fuselage, designed especially to link the large or medium-sized airports with the smaller, suburban regional airports. During 1978, 22 were sold to seven airlines, bringing total

sales to 34, with two more aircraft on option. The 330 is already in service with airlines in the U.S., Canada, Europe, the Caribbean and Hawaii. This is a promising result from a small company with limited resources, and Shorts has high hopes of continuing production of the 330 through the 1980s and beyond. Exploit-

ing the potential of the 330 is one of the major objectives of the company's five-year plan recently approved by the UK Government, resulting in a new State investment of £60m in the company up to 1982.

Shorts will also have a significant role in the manufacture of new generation jets for other companies. It is already a

major sub-contractor, for example, to Lockheed on the TriStar programme and to Boeing on the 747, while it also "pods" the Rolls-Royce RB-211 engines for both those aircraft, and has won the contract to pod the new RB-211 Dash 333 engines for the Boeing 757, ordered by British Airways and Eastern Air Lines.

Equipment manufacturers race against time

IT IS estimated that the total outlay of between £40m and £60m throughout the coming decade on new generation airliners of all kinds, about one-third, or between £15m and £20m, is likely to be spent directly on equipment, components and systems. These include such items as tyres, wheels, brakes, hydraulic and electrical systems, galleys, furnishings, and all the specialist "avionics" — airborne electronics — without which the modern airliner cannot fly. The latter category alone has assumed increasing importance in recent years, as the constant search for greater flight efficiency as costs have risen, and for ever greater safety in all weathers under all climatic conditions, has resulted in substantially more complex navigation control systems and landing aids, frequently involving on-board computers.

In addition to this direct share of the outlays taken by the equipment and component manufacturers, the shares of the airframe and engine manufacturers (roughly about one-third each) of the total cost of any airliner is again sub-contracted out to specialist manufacturers in other industries—such as metals, ceramics, glass, textiles, paints and so on—so that eventually, probably as much as three-quarters of the cash that an airline spends on a new fleet of airliners eventually finds its way through a wide spectrum of modern industry, often to companies far removed from aerospace manufacturing.

Orders

It is impossible to assess the precise extent to which direct airliner orders thus contribute to the overall levels of any country's employment and economic activity, for the number of companies involved eventually runs into several thousands contributing to just one new type of airliner or engine alone. But this fact alone should be sufficient to convince the sceptics that money spent on aviation is not just confined to a narrow sector of the economy, but benefits virtually all of it, sooner or later, in one form or another.

The business of supplying equipment and components to the "principals"—the airframe and engine manufacturers—has undergone some substantial changes in recent years, and these continue. One change is that the business has become increasingly international. The number of new types of engine and airframe decreases with each new generation, as a result of rising costs and increasing size, but the potential production runs of any given type of

successful airframe or engine are frequently longer than at any time in the past. This means that while competition has become fiercer, the rewards for success have become significantly greater.

But, at the same time, the specifications have become much more demanding, and the risk investment involved much greater. The result has been that equipment and component manufacturers have either had to become much more internationally minded to be able to bid for business several thousands of miles away, or prepared to spend substantial sums in developing products in advance of any guarantees of orders, or both.

Cheaper

Another significant trend is that the preliminary aircraft designer no longer settles his specification, chooses an engine and systems, and offers the lot to the airlines as a package on a fly-away take-it-or-leave-it basis. That may still be the case with some of the smaller and cheaper new ventures. But for the modern, wide-bodied jets, costing upwards of \$30m apiece, the tendency is increasingly to allow the airline customer his own choice of what goes into the airframe he is buying. Thus, while a new air frame may have some basic systems common to every model, such as avionics, controls, undercarriages, hydraulics and so on, many of the specialist items, from the engines through to the navigational systems, are left to the customer's choice, especially if the airline concerned is making a major purchase for many years to come. The extent to which this is done depends to a large extent upon how much the customer-airline is prepared to pay for departing from the basic design specification—and it can prove expensive, indeed. But it is increasingly being done, which is why most manufacturers nowadays are offering the airlines a choice of up to three engines on the new wide-bodies, with virtual freedom to choose any specialist systems they like. Thus, the making of a modern airliner is no longer a comparatively simple two-way exchange between the airframe and engine makers and the airline, but frequently involves as many as half a dozen major international companies, providing airframes, engines, electronics and other items, with a host of other smaller companies also eventually involved.

The inevitable corollary is that the whole business of airliner building and selling has become much more competitive, with some bitter struggles taking place not only at the peak of the pyramid to get the basic aircraft type selected by a specific airline, but all the way

down as companies strive to win contracts for their equipment.

The size of some of these contracts can be seen by some of the basic systems that Boeing has been selecting for its new 767 and 757 airliners. Most of these contracts have been awarded inside the U.S., but Boeing has made it clear that other companies world-wide are free to bid, and many UK companies are in the running. So far, among the major contracts awarded have been those to Cleveland Pneumatic Company for the main 767 landing gear, to Menasco for the nose landing

gear assemblies, to Honeywell's Avionics Division for the inertial reference navigation system for both the 767 and 757, and to Sperry Flight Systems for flight management systems, and Parker Hannifin/Bertea for flight control actuators. The engine-thrust management system for both the 767 and 757 is going to General Electric's Aircraft Equipment Division, even though there will be different engines on the two aircraft. Sundstrand Aviation Electric Power will supply the electric power generation systems for both the 767 and 757. All these

contracts cover up to 600 "shipsets" of the systems concerned, indicating that Boeing is itself confident of winning substantial orders for its new airliners in the years ahead.

But more significantly, these deals also indicate just how vitally important it is for any equipment component or systems manufacturer to break into the field now, in 1979, while the contracts are on offer. As with the engine manufacturers, time is not necessarily on their side, and once the major requirements have been filled, they are likely to remain closed for a very long time to come.

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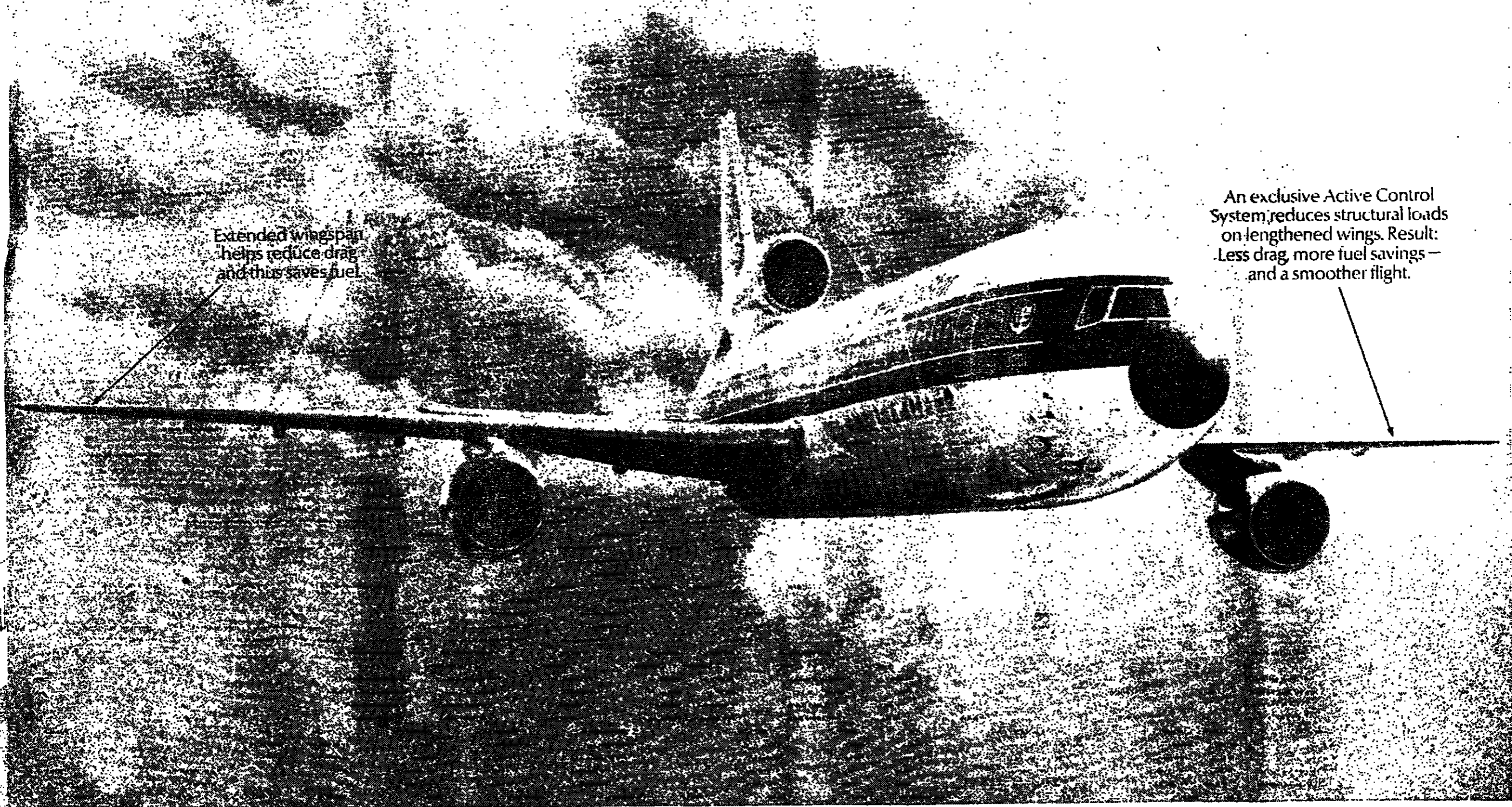
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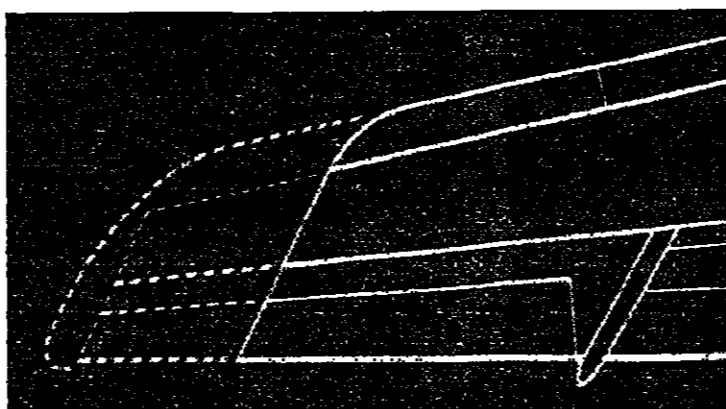
Soaring fuel costs are spurring builders of big jetliners to find new ways of reducing fuel consumption. One way is to have longer wings that reduce drag and thus cut fuel use. And all jetliners of the future will surely follow that approach.

Extending an existing jetliner's wings, however, would involve costly and time-consuming structural redesign. Except in the case of the Lockheed L-1011 TriStar.

Coming versions of the L-1011 will have a wing-span stretched nine feet.

The advanced technology of the L-1011 makes this possible. An exclusive system of Active Controls will reduce the structural loads on the extended L-1011 wings.

This Active Control System will also help give the L-1011 an even smoother ride through gusts and turbulence.



Each wing lengthened by 4½ feet.

The longer wings and Active Control ailerons, due for delivery in 1980, will join a unique family of L-1011 advanced features. Among those features are:

The exclusive Direct Lift Control System — It provides a more precise and responsive controllability on the glide path during the approach to landing.

The exclusive Flight Management System — Now in service, it can automatically control throttles for the best fuel efficiency.

The Flying Tail — The L-1011 is the only wide-bodied jetliner with a Flying Tail that gives the pilot better control throughout flight.

The exclusive Autoland — This system can take the L-1011 down through bad weather, automatically landing the plane more smoothly than a pilot could. For example, the L-1011 can land at major airports such as in London, Atlanta, Denver, Washington, D.C., and San Francisco, when all other wide-bodied jetliners are being turned away.

The L-1011 TriStar World's quietest, most comfortable, most advanced wide-bodied jetliner... the one that can today incorporate the technology that others will have tomorrow.

The Lockheed L-1011 TriStar.

AIRLINERS—THE NEW GENERATION VI

Fierce battle for engine markets

THE WORLD aero-engine business is now one of the most fiercely competitive elements of the overall aerospace scene. The business is vast. Of the total world market for new airliners of over £40bn through the 1980s, the engine share is likely to amount to at least one-third, or around \$15bn. The "big three" manufacturers, General Electric and Pratt and Whitney, both of the U.S., and Rolls-Royce, are all ready with new designs for the coming generation of airliners, and their combined actual and potential investments in those ventures will amount to well over £2bn.

The feature of the engine business is its long-term nature. It can take anything up to ten years before an engine company sees any profitable returns on its investments, and as a result the business not only requires enormous commitments of human, physical and financial resources, but also the patience to endure the long time-scale between launching a product and securing any financial rewards.

Technology

Because of the heavy research and development costs involved—anything up to £500m for any single new type—the number of new engine types is severely limited, and where possible all the major manufacturers focus their efforts on the evolutionary improvement of existing propulsion concepts, in terms of lower noise, fuel consumption and pollution, rather than seek dramatic but expensive new breakthroughs in technology.

Another feature of the engine scene is that the major airframe builders now offer each type of aircraft with a choice of engines. Thus, airlines can choose any one of the products from the "big three" for the particular range and payload performance desired, and some significant differences in choice are emerging. For example, the new Boeing 767 is being bought by United with Pratt and Whitney JT9D-7R engines, but both American and Delta are buying it with General Electric CF6-80 engines. Rolls-Royce may still win a contract, however, with its RB-211 Dash 524. It is talking with several airlines who are interested in 767s with that power-plant.

Rolls-Royce is planning to spend upwards of £500m on new

civil aero-engine programmes through the 1980s to secure its place in the market through to the end of the century and beyond. While it does not pretend that it can win the lion's share of the market, it nonetheless aims to increase its share to about one-third of the total, or some £5bn throughout the decade ahead.

The emphasis at Rolls-Royce continues to be primarily on development of the RB-211 family in all variants. The RB-211 ranges from 30,000 lbs up to 55,000 lbs thrust, with capability of going beyond that to 60,000 lbs if aircraft emerge requiring that kind of power. Basic members of the family include the Dash 22B of about 40,000 lbs thrust upwards, and the Dash 524 of about 50,000 lbs thrust and upwards, both used in versions of the Lockheed TriStar, while the Dash 524 is also used in the Boeing 747 Jumbo jet.

Another new variant is the Dash 535 of 36,720 lbs thrust, which has been chosen by both British Airways and Eastern Air Lines of the U.S. for use in the new Boeing 757 twin-engined short-to-medium range airliner. This is the first time that a new Boeing jet airliner programme has been launched with a foreign engine. The initial flight is planned for 1981, with entry into service in 1982. Work on the RB-211-535 is well advanced at Rolls-Royce's Aero Division at Derby, and engine testing begins this year. Both Boeing and Rolls-Royce are hopeful of an eventual market for upwards of 1,000 aircraft in this field, involving over 3,000 engines including spares.

So far as the Dash 524 is concerned, the aim is now to push its power upwards beyond 50,000 lb thrust, towards 55,000 lb and possibly even beyond. This engine is aimed primarily at the Lockheed Dash 500 TriStar, and at the Boeing 747, with particular emphasis on later versions of that aircraft, with greater ranges and bigger payloads. Most airline executives believe that the 747 will eventually become a 500-600 seater, and perhaps eventually a 1,000 seater, with a double-deck fuselage. In that case, power-plants of 60,000 lb thrust or more will be needed. Rolls-Royce does not intend to be left out of that battle.

Export deliveries of the RB-211 family to date total well over £550m, covering over 660

engines, and the engine is the biggest of all current UK aerospace export programmes. Rolls-Royce turnover at over £130m a year, and the programme provides employment for over 25,000 workers both at Rolls-Royce and in equipment and component suppliers throughout the UK.

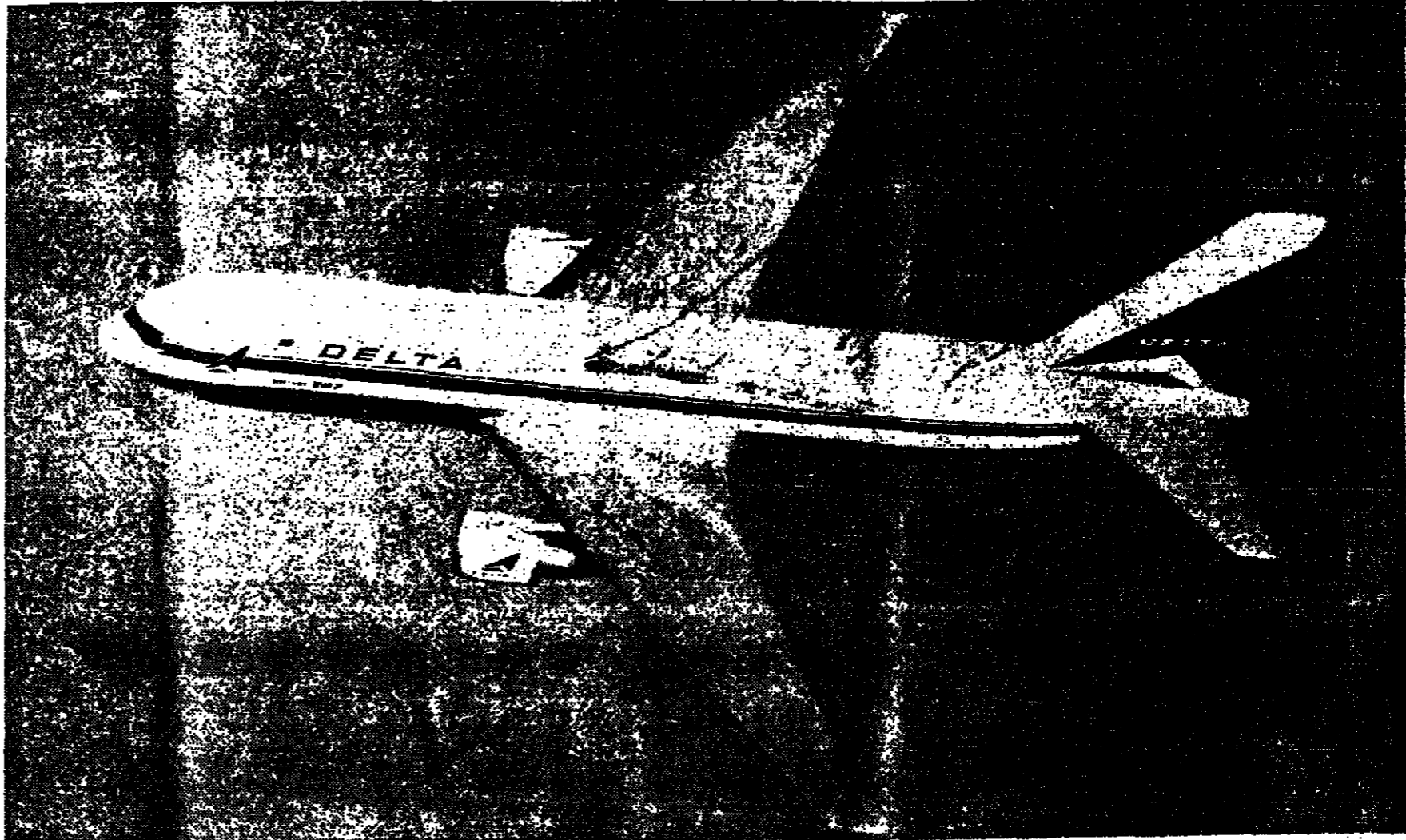
Another major new engine under development by Rolls-Royce is the RB-432, in the 16,000-18,000 lb thrust class, aimed mainly at new types of short-haul twin-engined airliners, such as the proposed Fokker Super F-28. Project definition has continued throughout the past year, and talks on collaboration with the Japanese are still under way. Joint UK-Japanese surveys have shown that a market for up to 1,200 RB-432 powered aircraft could emerge by the end of the 1980s, but full-scale development is not likely until orders have been won.

Existing

In the lower-thrust bracket is another new engine, the RB-401, of 5,500 lb, designed for the new generation of business and executive jets, where low fuel consumption and less noise are as vital as in bigger airliners. Work continues. But, as with the RB-432, full-scale development must await firm buyers.

But these Rolls-Royce engine programmes leave a gap in the "thrust spectrum" between the 18,000 lbs of the new RB-432 and the 30,000 lbs of the RB-211-535, which Rolls-Royce has as yet no plans to fill. This gap is currently occupied by a Franco-American engine, the CFM-56, and Rolls-Royce is well aware that this could mean giving away a part of the booming civil markets of the future. But it must accept this because with all its existing programmes, it will have its hands full financially and technologically through the 1980s. As it is, the RB-211-535 alone is expected to cost about £250m, while the RB-432 and RB-401 together will probably cost about the same. If the continued development costs of the Dash 524 and Dash 23 versions of the RB-211 are also included, the company's civil engine development programmes could amount to well over £500m.

General Electric, of the U.S., in 1978 had its best year for



The new Boeing 767 twin-engined "semi wide-bodied" jet airliner, in the colours of Delta Air Lines, which has ordered 20, with options on a further 22 aircraft

the past decade, with firm orders for over 190 of its CF6 series of engines for use in European A-300/A-310 Airbus, DC-10 tri-jets, and Boeing 747 Jumbo jets. The total value of this business was well over £500m.

GE offers a family of engines, ranging from the CF-34 of about 8,000 lbs thrust for feeder-liner aircraft, up to the big CF6 series with thrusts up to 34,000 lbs—the latter being competitive with the Rolls-Royce RB-211. Currently 59 airlines have ordered or are operating the CF6 in various versions, and as at January 1, 323 wide-bodied jet liners were flying with GE engines. To date, including spares, over 1,300 CF6 series engines have been built. Further development of the CF6 Series is planned, probably up to 60,000 lbs thrust or more to meet likely "stretches" of the

wide-bodied jets, and particularly of the Boeing 747.

GE is also associated with another major new engine, the CFM-56, in the 22,000-27,500 lb bracket, which is the product of a new consortium, CFM International, jointly owned by GE and Snecma of France. The engine is aimed at a wide range of civil and military transports, including airliners in the 115-180 seat category. Possible outlets for it include any Joint European Transport venture that Airbus Industries may develop, the planned Fokker Super F-28, and as a replacement for existing engines in both the Boeing 707 and McDonnell Douglas DC-8 four-engined jets. The first engine, of 24,000 lbs, is due for certification this October, and it should be in service by 1981. Higher-powered versions, up to 27,500 lbs, will be developed

through the 1980s, with the most powerful model, becoming available for service in 1988. A smaller version, the DR-18, of 18,000 lbs thrust, is planned, and this will be competitive with the new Rolls-Royce RB-432.

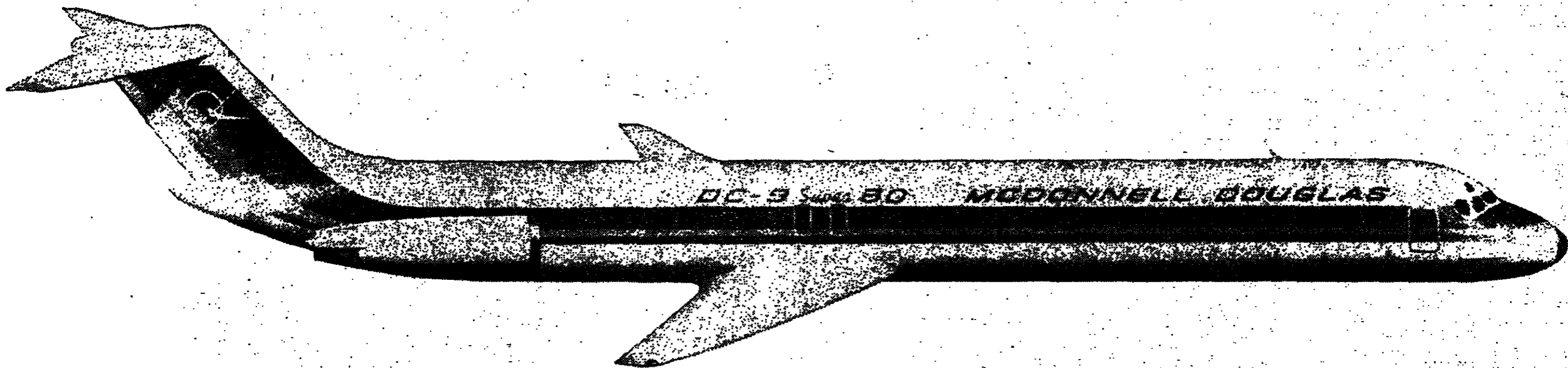
Pratt and Whitney, a division of United Technologies, is the third member of the "big three." Its engines include the JT8D, the most widely used commercial engine in the world, in such aircraft as Boeing 737s and 737s and McDonnell Douglas DC-9s. During 1978, over 570 JT8D engines were delivered, bringing to more than 9,000 the number of JT8Ds delivered to over 150 operators world-wide. P and W is now working on a derivative, the JT8D-209, of 18,500 lbs thrust, which powers the new McDonnell Douglas Super 80 version of the DC-9. This is substantially quieter

than the earlier JT8D, and has improved fuel consumption and less emission pollution. The JT8D-209 is being studied for possible application in other proposed new commercial aircraft while its performance, weight and price make the re-engineering of existing types such as the DC-8, 707 and USAF KC-135 a practical alternative.

Pratt and Whitney also makes the JT9D, now in service for more than 46 airlines world-wide on the Boeing 747 and the McDonnell Douglas DC-10 Series 40. The largest version of this engine the 59A/70A in service gives over 53,000 lbs thrust. In addition to the 747 and DC-10, the Airbus A-300 is being offered with this engine to give operators improved fuel economy, shorter take-off distances and other benefits. Another version, the 7Q, offers growth to 55,000 lbs thrust with

even further reduced fuel consumption. This engine, already ordered by several airlines in the 747, will enable the aircraft to fly nearly 100 nautical miles with 442 passengers.

Pratt and Whitney is continuing to work with Mercedes-Benz Turbomeca of West Germany, and Fiat of Italy on the "new technology" JT-100 engine, designed to span the thrust range from 25,000 lbs to 35,000 lbs. It will thus be a competitor not only for the Franco-U.S. CFM-56, but also for the Rolls-Royce RB-211-535. Development work has been under way for some time, and certification is set for late 1981. It is compatible with the production schedules of the new generation of aircraft, P & W has 53.2 per cent of the programme, MTU 12.8 per cent and Fiat 4 per cent.



When those near airports dream of quiet, they're dreaming of the DC-9 Super 80. It will be here in 1980.

The DC-9 Super 80 will cut the high noise area around airports to as little as one-fifth of what it is with current jetliners of comparable size. The Super 80, in fact, will be the quietest commercial jetliner in the skies. Quieter than any other new medium-range twinjet.

It's what you would expect from the innovative engineers at McDonnell Douglas—where technical superiority in design ranges from spacecraft and jet fighters to

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The extraordinary quiet is the result of extensive sound-suppression engineering. Engine housings are designed, not just to contain sound, but to avoid aerodynamic characteristics that create sound. The large fan in each of the new Pratt & Whitney Aircraft engines drives more cold air through ducts to yield greater thrust. The cold

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Quiet, and efficient, too. The Super 80 will offer airlines the lowest operating cost per seat mile of any jetliner in its class.

Watch for the new DC-9 Super 80. You'll see it long before you hear it.

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THE ARTS

Opéra

Lulu by RONALD CRICHTON

nd so, after years of fuss and frustration, rumours and interminable negotiations, Alban Berg's second opera, Lulu, has been performed in its entirety...



Teresa Stratas and Yvonne Minton

of a palindromic, in the middle of his second act, where the first Wedekind play ends and the second one begins. He cut and tightened the text, devising a scheme whereby Lulu's career, having taken a downward turn, mirrors the upward curve by doubling the roles of the three husbands she destroyed in the first part with three clients she picks up as a prostitute during her miserable last hours in London.

How many of the audience unfamiliar with Lulu immediately identified the Acrobat, I wonder? The overbearing sets during the characters. Never in my experience of this opera have Dr. Schön and his son Alwa, the dubious old Schigolch or the acrobat seemed so individually insignificant. In two of the scenes designer and producer create more problems than they solve. The glass walls of the theatre dressing-room, which allow an enticing glimpse of what appears to be the Opéra's Foyer de Danse, also comp...

scale. That the episode with Lulu and the midges is touchingly carried off doesn't excuse it. Anything less like the usual sex-pot than the Lulu of Teresa Stratas is hard to imagine—tiny, spare, a sparrow with large eyes and features that can harden when necessary, frosty hair and, one dress excepted, inconspicuous clothes. Not a man-killer, as Chéreau explains, but a woman fated to attract self-destructive men. Miss Stratas, who was said to have been unwell at the first performance, though she showed both energy and grit, sang many phrases in the lower and middle registers with the charm and intelligence one would expect, but like other singers of the old, incomplete version, she failed to deliver the highest parts (the first scene of act 3 contains some new and hair-raising examples) in what can only be described as a squeak. Though the lines of spoken German gave Miss Stratas no difficulty, her sung words were barely audible—a fault that must be put right.

Current affairs programmes. extraordinary story of the West German rocket company OTRAG which has set up business on a 40,000 square mile site in Zaïre and with the help of former V2 specialists has developed a spy satellite system for sale to all comers. It is, of course, cheering to see British broadcasters achieving such international success. Yet the main effects of watching day after day of news and current affairs programmes from countries all over the globe was one of growing sadness, mainly on account of the content, although technique too did frequently leave a lot to be desired. The repetitive nature of problems and pains, misery and murder, famine, war and all forms of inhumanity illustrated by these programmes is on its own enough to cause deep dejection. It is not particularly enrapturing to sit at home and watch even the highly selective collection of real-life horrors so often offered by domestic television. It is much worse to sit and watch a French news report on Beirut, followed by a British report on the training of Nikomo's guerrillas, followed by a report on the bombing in Eritrea, followed by Spanish footage of carnage in Nicaragua, followed by an American report on Palestinian suicide terrorists, followed by a Hungarian programme about war in the Sahara, followed by a dozen other depressingly similar reports. The image of mankind produced by such an accumulation is dark and sinister. Almost as bad is the result of the occasional fortuitous juxtaposition. For instance, on Thursday morning a Belgian programme used the town of Charleroi to illustrate the crisis in the Walloon economy and explain the growth of unemployment. In the afternoon, an American entry illustrated the activities of the Greenpeace conservationist organisation, showing volunteers in rubber dinghies on the high seas placing themselves as human barriers between Russian harpoon guns and whales. The Greenpeace people put across a powerful argument for the ending of all whaling before the animals are wiped out. At no stage did I mention the loss of jobs this

Television

Man's inhumanity to man

by CHRIS DUNKLEY

different from those familiar propaganda films about cooperative farms and the glorious militia, and is only, I suspect, a trailer for what television will soon be showing us of China's new image. A five-year-old Chinese girl who burst spontaneously into song and dance for the camera would, by now, be under a waterfront contract if she lived in the West—where it is not to deny her charm. But such moments were rare. More commonplace were examples of techniques which we should be grateful are not (yet) used (much) in Britain. It now seems almost standard practice in many countries, if you feel that the viewer's heartstrings are not being tugged hard enough by, say, slaughter in Nicaragua, to stick a bit of Tchaikovsky at his most sentimental on the soundtrack. Furthermore, commentaries often make claims which the pictures not only fail to support but sometimes flatly contradict. This reached its absurd climax in a Yugoslav film about Cambodia in which a warty ethnologist on the soundtrack and remarks of the "Here is a happy 12-year-old" variety contrasted starkly with the pictures of sexually segregated labouring by four and a half uniformed black men in a field. In the entire film only two "Pat Pat" laughs, and he laughed all the time. Since different categories of programme are screened simultaneously in separate viewing rooms at this festival it is impossible for one viewer to see all that is on offer. Having decided to concentrate on news and current affairs (and been convinced that our best is, as the awards suggest, as good as and better than anyone's) I saw little of the drama, and cannot judge how our domestic standards compare with the international offering at Monte Carlo. Luckily I did, however, see the two Gold Nymph drama winners: *How To Get Daddy In A Fix* from Czechoslovakia, and *Black and White Like Day and Night* from West Germany. The current affairs they can keep — at least until BBCI scraps its own in favour of non-stop chat shows. Then a few imports might come in handy. Saddening though such programmes may be, to know is better than not to know.

Franz Matur's glacial Jack the Ripper is so striking that his Dr. Schön earlier in the evening seems like a preparatory study—it would really be better the other way round. Yvonne Minton's potentially excellent Geschwitz is not yet quite in focus. Hanna Schwarz as besotted Schoolboy and complaisant Page refuses to be squashed by her surroundings. As the Banker, Jules Bastin bestrides the money-ensembles in the Paris scene when shares start to crash. Robert Tear makes his mark both as the painter and as the negro, Gerd Nierstedt's rimblesness as the acrobat belies his urathletic appearance. As Alwa, Kenneth Riegel sings surely but dryly. Likewise, in three small roles, Helmut Pampuch. In the orchestra pit Boulez brought his remarkable power of clarity to the outlining of the structure and filled those outlines with commitment and colour. Only in the second act did the expositor at times (not, however, in the central interlude) threaten to take over from the interpreter. In the last scene of the third act the passion and force of both music and performance were deeply moving. But this was an uneasy performance, too wary to catch the languorous atmosphere of the piece. Rolf Gehhaar used two similes to describe his *Camera Oscura*, one of which was that of a beam of light flashed at random around a dark room—but for me it revealed nothing except the clichés of broadcast ensemble writing. The room was empty; perhaps that was the point. In the absence of programme notes, Orton, Saxton and Gehhaar introduced their own works impromptu, briefly and sometimes uneasily; but this worked well, a welcome change from pre-packaged, pre-concert "lectures" on modern music.

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lasgow Citizens'

Macbeth

The most distinctive temple theatre in the land has apparently discarded its house in favour of a casually assembled production by Giles Gaskill of Shakespeare's latest tragedy. Performed under working lights, with classical furniture and well worn wigs, the overall effect is as vast as any of the more baroque concoctions. Comparisons have been made in short sighted corners of the Scottish Press with Trevor Nunn's simple chamber approach. But the real matter is indeed it is a model—his William Gaskill's spine-tingling 66 Royal Court production, even in a full glare of white light with minimal properties.

braces, normally used to prop up flat scenery. It has long been an unfair accusation levelled at the Citizens that they do not know how to speak verse. Well, Albert Finney and co. at the National, not to mention the current Young Vic mob, are thoroughly put in the shade by this piece of work. There is the odd weak link in the acting strength—Malcolm and Macduff do little to relieve the tedium of the notorious English scene round the rest of the cast is admirable, audible, bright and intelligent. The full 1623 text is given, minus only the unlamented Hecate scenes, and actors not on stage lounge at the side in full, undisturbing view, reading, smoking or just listening. The cast is all male, the actors playing Lady Macbeth, Lady Macduff and the Gentlewoman doubling as the witches. There is nothing cheap or coyly transvestite in this tactic. David Hayman's Lady Macbeth, simply attired in a white T-shirt and rehearsal dress, is a brilliant interpretation, combining (at muscularity with tremendous verve of delivery and the fluttering gestures of a distraught hostess when the party goes awry. The production is full of inviting detail: After Duncan's murder, Malcolm and Donalbain fly harum scarum through the stalls; the murderous couple cling terrified to the theatre's whitewashed back wall during the rapid stichomythia of "I have done the deed"; the murdered Banquo lies downstage while the feast he falls swings into upstage view; the entire banquet scene, in fact, has great fluidity, culminating in Macbeth's shout of "It will have blood."

This is a production of which Peter Brook in his current mood would be proud. Mr. Gaskill has provided both a perfect introduction to the play for young audiences and, in Gerard Murphy, the best young Macbeth I have seen. MICHAEL COVENEY

Carlisle Theatre Club public appeal. The Green Room Theatre Club, Carlisle, has been forced to launch a public appeal to complete work on a new 150-seat theatre because £12,000 worth of labour promised by the Manpower Services Commission was not forthcoming.

Like many of his pieces this incorporates many facets of music, not solely jazz. The promise was that Friday's performance would showcase the work in the most suitable ambience, namely a cabaret setting. Alas The Venue (formerly the vast Metropole Cinema, minus the stalls and with tables placed on the now unranked floor) could hardly be described as intimate, even for a football match. Mama Chicago is a words and music commentary on big city life, the words capturing the hard, urban atmosphere exemplified when Phil Minton sings of "this graveyard of a

Riverside Studios

Music Projects

by NICHOLAS KENYON

Revolution is at the heart of Richard Orton's Brass Phase, which was given its London premiere at the Riverside Studios on Sunday. This is no Marxist tract, however, but a nostalgic fantasy for 12 brass players on a rotating stage, each surrounded by four musicians, filling a roughly circular space. The players rotate on their chairs, sometimes freely, sometimes unanimously, while the conductor directs from four separate positions around the circle, timing two sections by the periods taken to walk and run round the players. Perhaps we might have heard more had we been allowed to wander around the circle as it was, the aural result of what the composer called "static choreography" was negligible. The music itself was a free-ranging fantasy on the associations of brass band music, fragmented circus fanfare, a half-heard hymn-tune, breathing noises with clarinet mouthpieces—a pale reflection of a strong northern culture, a weak echo from Grimethorpe. The first half of this concert

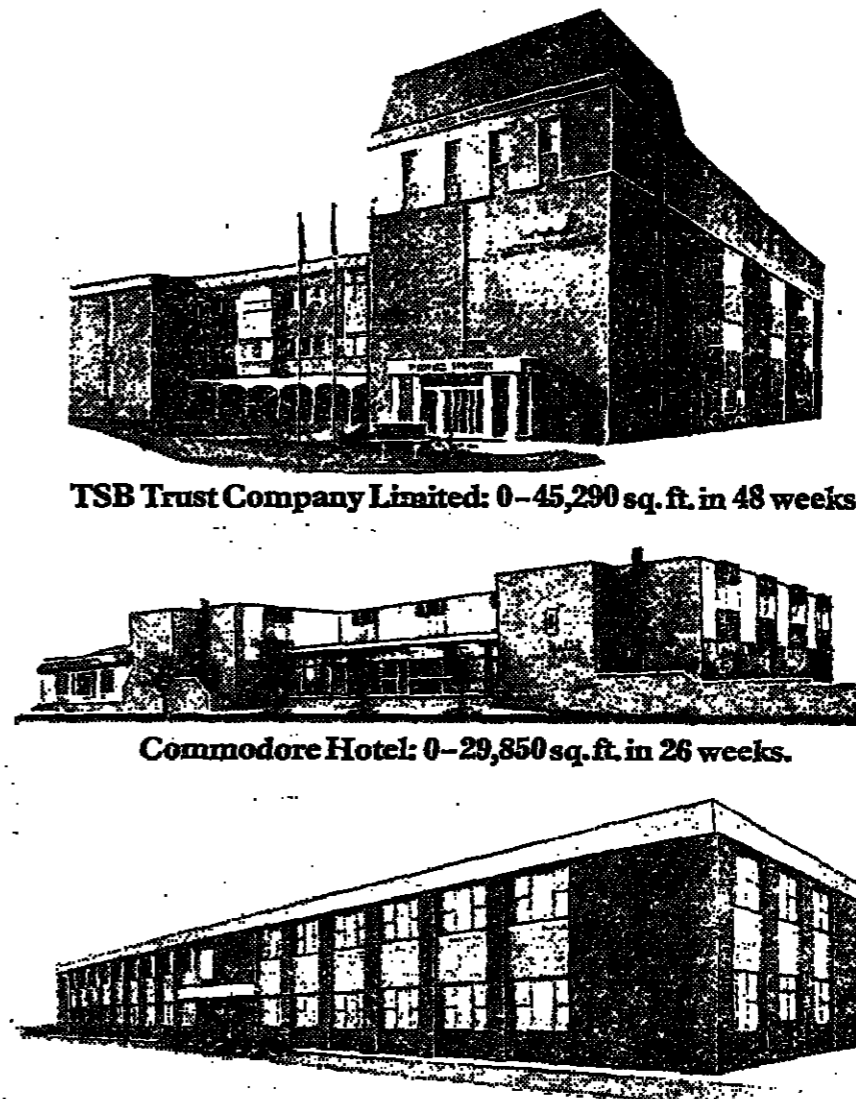
The Venue, SW1

Mama Chicago

by KEVIN HENRIQUES

Mike Westbrook has been performing Mama Chicago, his extended composition cum jazz cabaret, since July last year when it opened at the Open Space in London before going on to the Edinburgh Festival. On Friday it returned to London for what is likely to be its last presentation in the capital. Westbrook is a prolific composer, never content to wallow in past glories, always working on adventurous new ideas. Like many of his pieces this incorporates many facets of music, not solely jazz. The promise was that Friday's performance would showcase the work in the most suitable ambience, namely a cabaret setting. Alas The Venue (formerly the vast Metropole Cinema, minus the stalls and with tables placed on the now unranked floor) could hardly be described as intimate, even for a football match. Mama Chicago is a words and music commentary on big city life, the words capturing the hard, urban atmosphere exemplified when Phil Minton sings of "this graveyard of a

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GOPENG CONSOLIDATED LIMITED

Extracts from the Statement of the chairman, Mr. J. D. Helling, O.B.E., F.I.M., circulated with the Report and Accounts for the year ended 30th September, 1978. The Consolidated Accounts for the Group's financial year ended 30th September, 1978, show a gross mining profit before depreciation of £2,268,395 compared with £2,242,381 in the previous year.

UK COMPANY NEWS

Metalrax profits expand 44%—pays 30% more

The directors of Metalrax (Holdings), engineering group, report a 44 per cent rise in taxable profits from £1.47m to a record £2.11m for 1978. Turnover was well ahead from £11.04m to £17.04m. There was a 36 per cent rise in profits to £922,886 at the interim stage, and the directors said they were confident the second half would show a further improvement.

LASMO loss up to £12.43m

AN INCREASED loss for 1978 of £12.43m against £7.56m is reported by London and Scottish Marine Oil Company. This figure is struck after interest payable of £12.52m (£10.41m) and interest receivable of £81,000 (£2.55m).

Second half upsurge gives Plantation Holdings £4m

AS EXPECTED, there was a marked improvement in second-half taxable profits at Plantation Holdings—up from £1.6m to £2.74m—leaving 1978 profits only marginally lower at £4.02m against £4.13m. Interest increased from £164,000 to £268,000. In December, the directors said that the group had experienced a difficult first half—pre-tax profits down from £2.32m to £1.25m—but indications were that the second six months would show a marked improvement.

English Association down midway

A fall in taxable profits from £115,387 to £77,240 for the half-year to December 31, 1978, is reported by English Association of American Bond and Share Holders. The directors say the forecast increase in the rate of commission deducted from dividends came into effect towards the end of the half year and will make a substantial contribution to the year's profit.

PENKALLEN LIMITED

Extracts from the Statement of the Chairman, Mr. J. T. Cheppel, C.B.E., F.I.M., circulated with the Report and Accounts for the year ended September 30, 1978. The pre-tax profit for the year, after taking credit for profits arising from the sale of investment, £24,342 and value of leases being worked on tribute, £33,470, amounts to £153,329 compared with £72,081 in 1977/78. As forecast, production was considerably lower at 104.73 metric tons (208.37 metric tons in 1977/78) and while the average price received for our tin concentrates was higher at £3,119 per m. ton (£3,027 per m. ton in 1977/78), the lower production has meant that the dreges operated at marginal profitability during the year.

Vanbrugh Life charges raised

Vanbrugh Life Assurance, the linked life subsidiary of the Prudential Corporation, is putting up its charges as from March 1 on certain of its contracts. As from that date, the annual fee on new contracts is being lifted from 1 per cent to 1.5 per cent and will apply to its Capital Investment Portfolio, the Vanbrugh Investment Portfolio and the Maximum Investment Plans. Existing contracts are unaffected.

18 Startling predictions for Investors. Gold will trade at over US\$400 per oz. Commodity prices will explode! The US will move into a recession—taking the rest of the world with it.

Common Market Trust Limited. Interim Report to 28th December, 1978. The Directors report an 11.6% increase in the value of Participating Shares in Common Market Trust Limited during the last six months in which most continental European stock markets moved ahead and the strength of the major European countries contributed to the attractions of the markets where the Company is invested.

Lee Valley Water Company. OFFER FOR SALE BY TENDER OF £2,500,000. 8 per cent. Redeemable Preference Stock, 1986. Application has been made to the Council of The Stock Exchange for the undermentioned Stock to be admitted to the Official List.

Get Timely Advice. Sent to you every Wednesday, the IC News Letter gives you expert share recommendations on the right day for you to act, for the greatest benefit. Take a subscription to this unique investment service, and see the advantages for yourself.

There's no fire without smoke damage. Call Odex Airkem SOS and be back in business in a day. Smoke causes damage, infiltrating property, fittings and goods. It's damage that can add up to a substantial cost in unsalvaged merchandise and furnishings, and could put you out of business for days.

LEGAL NOTICES. EDUCATIONAL. GUIDANCE FOR ALL AGES! 15-24 yrs: Courses, Careers, 25-34 yrs: Improvement, Changes, 35-54 yrs: 2nd Careers, Review. CAREER ANALYSTS. AM HUMAN. LECTURES. GRESHAM LECTURES IN ASTRONOMY. COMETS AND CATASTROPHES. TRAVEL. MARELLA MAJORCA, ALGARVE. Top golf holidays from 129 incl. flights, hotels or 4995, Self-drive car, Edwards Transport, Brochure. AFTA. ATOL. 6765.

Companies and Markets

INTERNATIONAL COMPANIES and FINANCE

NORTH AMERICAN NEWS

General Motors plans major Mexican expansion

By JOHN WYLES IN NEW YORK

GENERAL MOTORS Corporation yesterday announced a significant expansion of its activities in Mexico, including plans for a new passenger car assembly plant, a new engine manufacturing plant and two new component production facilities.

GM's announcement came just four days after disclosure of its purchase of Chrysler's facilities in Venezuela and Colombia and underscores its determination to increase the size and profitability of its large-scale operations. Its plans call for a new assembly plant near Saltillo with a production capacity of more than 100,000 units a year and total two-shift employment of about 2,500.

By mid-1982 and this is planned to employ 1,500 workers a day on three shift working, employing about 2,200. The company's existing engine plant at Toluca and its foundry will not be affected.

14% gain in profits at ABC

By Stewart Fleming in New York

AMERICAN BROADCASTING, the third largest of the U.S. television broadcasting networks, but the one which has been leading the field in terms of the popularity of its programmes, yesterday reported a 14 per cent gain in fourth quarter earnings.

Record interest rate for Bell Telephone issue

BY OUR NEW YORK CORRESPONDENT

INTEREST RATES on top quality utility company new issues hit a new peak in the current interest cycle yesterday when South Central Bell Telephone's 40-year bonds were offered to investors at a yield of 9.63 per cent.

South Central Bell is widely seen as one of the best quality issuers among American Telephone and Telegraph subsidiaries. For this reason traders and investors were watching closely to see how the \$250m of triple-A rated securities was priced and how quickly the syndicate which won the competitive bidding to

international situation. One measure of how the market has fallen is that on January 16 Bell Telephone of Pennsylvania, another A T and T subsidiary whose bonds are rated triple-A but are generally not so highly regarded by investors as the South Central Bell issues, sold \$150m of 40-year debentures at a yield of 9.37 per cent.

Sterling Eurobond from FFI

By John Evans

WITH MOST sectors of the international bond markets under varying degrees of pressure, market attention swung yesterday to the Eurosterling market where Finance for Industry is launching a \$10m issue.

Asbestos Corporation hits at valuation

By Robert Gibbons in Montreal

A STUDY commissioned by the Quebec government which valued Asbestos Corporation shares at C\$40 each is "totally wrong," according to Mr. Maurice Taschereau, the Asbestos Corporation president.

AMC to double Jeep manufacturing capacity

BY KENNETH GOODING, MOTOR INDUSTRY CORRESPONDENT

AMERICAN MOTORS (AMC) will spend nearly \$100m to double its manufacturing capacity for Jeep utility vehicles and to provide extra marketing and distribution back-up in the three years to 1981.

But the increase in capacity has enabled AMC, and Renault to push ahead with plans, revealed for the first time yesterday, to market Jeeps in French-speaking West Africa—countries such as Zaïre, Gabon and the Cameroons.

Agreed bid for Tior

By David Lascelles in New York

SOUTHERN PACIFIC, the railroad company, announced agreement in principle to buy Tior, the Los Angeles-based insurance company, for about \$255m. The deal follows the unsuccessful attempt earlier this month by American General Insurance of Houston to take over Tior with an offer worth \$34 a share.

\$24m Tanzanian loan completed

BY FRANCIS GHILES

THE FIRST syndicated loan for Tanzania has been completed. AIR Tanzania Corporation is raising \$23.97m, half of which is funded by the U.S. Eximbank at a fixed rate of 8 1/2 per cent, the other half of which was syndicated among six banks led by BankAmerica International.

The Brazilian airline, Varig, is arranging a financial package amounting to at least \$200m, of which \$78m will be in the form of several loans. The first part is split into two tranches. A 3 1/2-year tranche, amounting to \$28.5m, carries a spread of 1 1/2 per cent, and a 12-year tranche

amounting to \$40m, carries a spread of 1 1/2 per cent. The second part of this loan amounts to 8.5 per cent and is related to the cost of Canadian-provided equipment. Terms include a spread of 1 1/2 per cent and a maturity of 12 years.

Fourth quarter setback for IU International

BY OUR NEW YORK STAFF

IU INTERNATIONAL'S attempt to reduce the exposure of its shipping subsidiary, Gotaas Larsen, has resulted in a \$41.76m fourth quarter loss.

Anticipating a major increase in demand for liquefied natural gas (LNG), Gotaas Larsen was responsible more than five years ago for one of the largest block orders ever placed for giant LNG tankers. Four of the six have so far been delivered, but a much slower than expected development of the LNG market has prompted IU to cancel one \$200m tanker contract and to defer delivery of the remaining vessel from the Kawasaki shipyard in Japan for four years.

Resorts wins licence battle

By Our New York Staff

RESORTS INTERNATIONAL has won its year-long battle for a permanent licence to run its new casino in Atlantic City, the first of its kind outside the State of Nevada. The victory appeared to clear the way for many of the other companies developing casinos in the New Jersey resort, and the shares of companies with gambling interests soared on the news.

Gimbels president resigns

NEW YORK — Mr. James A. Connolly has resigned as president and chief operating officer of Gimbels New York, effective immediately, to pursue unspecified other business interests.

Gimbels New York is a subsidiary of Brown and Williams Industries, which in turn is a subsidiary of British American Tobacco. Gimbels is part of the Brown and Williams retail group, formed earlier this month.

Dow Banking's Iranian loan

ZURICH — Dow Banking Corporation has fully recovered the principal interest and overdue interest on a short-term interbank U.S. dollar deposit by a small commercial Iranian bank and has stepped legal moves aimed at recovering the funds.

About two weeks ago, the Swiss-based subsidiary of Dow Chemical moved to block the assets in New York and London of the Iranian bank because it had allegedly defaulted on the deposit.

FT INTERNATIONAL BOND SERVICE

The list shows the 300 latest international bond issues for which adequate secondary market exists. For further details of these or other bonds see the complete list of Eurobond prices published the second Monday of each month. Closing prices on February 27

Table with columns: Issued, Bid, Offer, Change, Day, Week, Yield. Includes sections for EURO AREA, BRITISH MARK, and SWISS FRANC.

Table with columns: Issued, Bid, Offer, Change, Day, Week, Yield. Includes sections for YEN STRAIGHTS, OTHER STRAIGHTS, and FLOATING RATE NOTES.

Advertisement for 'The Kingdom of Denmark' US \$250,000,000 Medium Term Credit Facility. Includes logos of various banks and financial institutions.

Table with columns: Issued, Bid, Offer, Change, Day, Week, Yield. Includes sections for EURO AREA, BRITISH MARK, and SWISS FRANC.

Companies and Markets

INTL. COMPANIES and FINANCE

HONGKONG AND SHANGHAI BANK

Profits increase surpasses forecast

BY HUGH PEYMAN IN HONG KONG

THE HONGKONG and Shanghai Banking Corporation surprised even the most optimistic forecasters yesterday...

Japanese chemical companies to merge

By Yoko Shibata in Tokyo SHOWA DENKO, a leading Japanese chemical company and Showa Yuka, its diversified petrochemical company subsidiary...

Nordic Bank



Summary of Audited Accounts for the year ended 31st December, 1978

Table with financial data including Consolidated Balance Sheet, Share Capital, Reserves, and Total Assets for 1978 and 1977.

Note: The consolidated balance sheet incorporates the accounts of Nordfinanz-Bank Zurich...

Nordic Bank Limited

Nordic Bank Limited, Shareholding Banks: Copenhagen Handelsbank, Den norske Creditbank, Kansallis-Osake-Pankki, Svenska Handelsbanken.

Howard Smith advances to record

James Forch in Sydney HOWARD SMITH, the shipping, engineering, coal and sugar company...

Earnings growth at Bank Leumi

BY L. DANIEL IN TEL AVIV BANK LEUMI - Israel's oldest and biggest bank and one of the world's top 100 - raised its net profit by 38 per cent to £171.9m (\$41m) in 1978.

SAAN ahead in difficult year

BY JIM JONES IN JOHANNESBURG DURING 1978, the first year of commercial television in South Africa, South African Associated Newspapers (SAAN) reported a marginal operating profit increase to R3.33m (\$3.92m).

NORDFINANZ-BANK ZURICH



Extract from Audited Accounts 31st December, 1978

Table with financial data for Nordfinanz-Bank Zurich including Balance Sheet, Share Capital, Reserves, and Profit and Loss Account for 1978 and 1977.

NORDFINANZ-BANK ZURICH

Nordfinanz-Bank Zurich, Shareholding Banks: Nordbank Limited London, Copenhagen Handelsbank, Den norske Creditbank, Kansallis-Osake-Pankki, Svenska Handelsbanken.

UOB final improves by 25.7%

By H. F. Lee in Singapore THE United Overseas Bank (UOB) group has chalked up an impressive 25.7 per cent improvement in post-tax profit for the year ended December, 1978.

Setback for Prima

PRIMA, the major Singapore flour miller, suffered a setback in 1978 with post-tax profit declining sharply...

This announcement appears as a matter of record only.

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CURRENCIES, MONEY and GOLD

Sterling firm: dollar improves

Sterling remained firm overall in the foreign exchange market yesterday, but eased from the highest levels touched during the morning. The pound opened at 2.025-2.0275, and touched a point of 2.0270-2.0280 in morning, where the Bank of England may have intervened to prevent any further rise. The pound then eased to 2.025-2.0275, and closed at 2.025-2.0275, a rise of 15 points on the day. The pound traded at 2.025-2.0275, and the Bank of England rose to 64.2, the highest since March 1978.

THE POUND SPOT AND FORWARD

Table with columns: Day's spread, Close, One month, Three months, % p.a. for various countries like U.S., Canada, West Germany, etc.

THE DOLLAR SPOT AND FORWARD

Table with columns: Day's spread, Close, One month, Three months, % p.a. for various countries like U.K., France, Italy, etc.

CURRENCY RATES

Table with columns: Bank, Special Drawing Right, European Unit of Account, February 28, 1979.

CURRENCY MOVEMENTS

Table with columns: Bank, Morgan Guaranty, February 27, 1979.

OTHER MARKETS

Table with columns: Feb. 27, Note Rates for various countries like Argentina, Australia, Brazil, etc.

CHANGE CROSS RATES

Table with columns: Feb. 27, Sterling, U.S. Dollar, Deutschmark, Japan's Yen, etc.

D-CURRENCY INTEREST RATES

Table with columns: Feb. 27, Sterling, U.S. Dollar, Canadian Dollar, etc.

INTERNATIONAL MONEY MARKET

Paris call money cut

Interest rates were generally lower yesterday in Paris, and money fell from 61 per cent on Monday to 61 per cent today. The same level at which the market is trading, and the authorities may make today a move to cut the rate to 60 per cent, and the market is trading at 61-62 per cent. Longer term rates also declined with one-month money at 61-62 per cent, and three-month money at 61-62 per cent.

GOLD

Further fall

Gold fell 51 to close at \$247-8248. It opened at \$248-8249, slightly firmer than the Monday close, but eased to \$247-8248 at the morning close, and \$247-8248 at the afternoon close. The lowest level touched was \$246-8248 in the afternoon, shortly after New York began trading.

MONEY MARKET

Interest rates decline

Bank of England minimum lending rate fell 14 per cent since February 8, to 12 1/2 per cent. The rate is now 12 1/2 per cent, and the market is trading at 12 1/2 per cent. The authorities may make today a move to cut the rate to 12 per cent, and the market is trading at 12 1/2 per cent.

MONEY RATES

Table with columns: NEW YORK, GERMANY, FRANCE, JAPAN, Money Rates for various currencies.

APPOINTMENTS

THE BRITISH COUNCIL Appointment of Director-General. The Board of the British Council invites applications for the post of Director-General, which falls vacant on 1 May 1980.

RARE CLASSIC STAMPS INVESTMENT SERVICE

It is possible with our expert guidance to keep ahead of the current inflation rate and to enjoy a healthy capital appreciation combined with the fascination of an absorbing and stimulating hobby.

SEMINARS

INSEAD

European Institute of Business Administration Fontainebleau, France. Management and Business Opportunities in Japan. Objectives: A five-day seminar to develop: understanding of the Japanese socio-economic environment and business behaviour.

COMPANY NOTICES

THE COMMERCIAL BANK OF AUSTRALIA HALF-YEAR RESULTS. The Directors announced that audited profit for the half-year ended 31st December 1978 was \$11,000,000.

RESIDENTIAL PROPERTY

California Orchards. California Orchards, U.S.S.A. million freehold, approximately 670 acres; 1.7-mile frontage on State's largest river.

NOTICE OF PURCHASE

NOTICE OF PURCHASE SHELL INTERNATIONAL FINANCE N.V. 5% GUARANTEED NOTES DUE 1990. NOTICE IS HEREBY GIVEN that the following notes were purchased on the 28th day of February 1979.

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18 Montpelier Mews, London SW7. 584-3285. We have a large selection of high quality furnished properties to let on short/long term basis.

NOTICE OF MEETING

NOTICE OF MEETING THE COLNE VALLEY WATER COMPANY. The annual meeting of shareholders of the Colne Valley Water Company will be held at the Registered Office on Thursday, 22nd February, 1979, at 11 a.m.

SOUTH BUCKINGHAMSHIRE

CLOSE TO GREAT MISSENDEN, AYLESBURY 9 MILES. A FINE COUNTRY HOUSE IN MAGNIFICENT AND PRIVATE GROUNDS OF 25 ACRES WITH OUTSTANDING SOUTHERLY VIEWS.

NOTICE OF MEETING

NOTICE OF MEETING THE COLNE VALLEY WATER COMPANY. The annual meeting of shareholders of the Colne Valley Water Company will be held at the Registered Office on Thursday, 22nd February, 1979, at 11 a.m.

RAFFETY

High Wycombe (0494) 21234 or Amersham (02403) 5436. A shareholding entitled to attend and vote at the meetings and appoint a proxy to attend and vote instead of him.

NOTICE OF MEETING

NOTICE OF MEETING THE COLNE VALLEY WATER COMPANY. The annual meeting of shareholders of the Colne Valley Water Company will be held at the Registered Office on Thursday, 22nd February, 1979, at 11 a.m.

STAFF RECREATIONAL PREMISES - MAJORCA

Near Palma Apartments. with own pools, garden, beach, available on 3, 6, 11 months or longer leases. Furnished, equipped and serviced. Used by other UK and multinational companies. Rents from £150 p.m. Sleep up to 6 people. Information and brochure Malloca Holiday Rentals Ltd 160 Southampton Row London WC2B 5AP Tel: 01-340 8402

NOTICE OF MEETING

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SARDINIA

BEAUTIFUL MODERN HOUSE. for sale in COSTA PARADISO DEVELOPMENT. On lot of 5,000 sq.m., commanding magnificent views of north-west coast, including complete privacy and tranquility. Four double bedrooms, 2 bathrooms, sitting room, kitchen, garage and structured swimming pool 18 x 5 sq.m. plus additional terrace 10 x 5 sq.m. 40 sq.m. Electric, telephone and drink water. Price on 14 house. See further particulars and photographs. Apply Box T 5026, Financial Times, 10 Cannon Street, EC4A 3DF

NOTICE OF MEETING

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RUTLAND GATE

KNIGHTSBRIDGE SW1. Freehold Vacant Possession. 4 bedrooms, 2 bathrooms, 2 Reception rooms, including sun lounge, 2 parking spaces, garage, garden. WHITMILL PRESCOTT 36 Elder St. London E1 Tel: 247 7256

NOTICE OF MEETING

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GUERNSEY PROPERTIES

Improve your quality of life - live in Guernsey! No stairs, stable and secure. Low 1979. Full selection of properties from £50,000 plus fees. See details in Guernsey book explaining all the facts, contact: S. Lovell, Chartered Surveyors LOVELL & PARTNERS, (Est. 1875) St. Peter Port - Tel: 0481 23636

RESIDENTIAL PROPERTY

FOR SALE Caribbean island. Freehold building plot of 1 acre. Prime position. Financial Times, 10, Cannon Street, London EC4A 3DF

RUTLAND GATE

KNIGHTSBRIDGE SW1. Freehold - Offers Invited. 6 BEDDERS IN VACANT WITH THE PROPOSED ADDITION OF 8 BEDDERS. Suitable for conversion into 7 large flats. WHITMILL PRESCOTT 36 Elder St. London E1 Tel: 247 7256

NOTICE OF MEETING

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PHILBEACH GARDEN SW5

Overlooking Gardens. Offers Invited. Planning permission has been granted for a 3-room, 6 and 1 bedroom, 2 bath, 2 car garage, garden. WHITMILL PRESCOTT 36 Elder St. London E1 Tel: 247 7256

NOTICE OF MEETING

NOTICE OF MEETING THE COLNE VALLEY WATER COMPANY. The annual meeting of shareholders of the Colne Valley Water Company will be held at the Registered Office on Thursday, 22nd February, 1979, at 11 a.m.

MAVIER HOUSE

3 bedrooms, 3 bathrooms, 3rd ancillary office use. 12,000 sq. ft. 1979. Full selection of properties from £50,000 plus fees. See details in Guernsey book explaining all the facts, contact: S. Lovell, Chartered Surveyors LOVELL & PARTNERS, (Est. 1875) St. Peter Port - Tel: 0481 23636

Early Dow fall of 9.2 on inflation worries

INVESTMENT DOLLAR PREMIUM ... Casino Gambling shares, after Monday's buoyancy on Resorts International being granted a permanent licence to operate its casino in Atlantic City, New Jersey, were mainly narrowly mixed at mid-session yesterday.

Steel and Siemens DM 1.30 in Electricals. Deutsche Bank added DM 1.50. There was a good turnover in the Options market, where prices rose slightly, while French stocks also edged higher.

Diamond leader De Beers, however, advanced 20 cents to R9.40 on overnight U.S. demand. Coppers were basically unchanged, while Platinum was easier, although implants gained.

Indices NEW YORK - DOW JONES

Table with columns for Date, Index Value, High, Low, and Change. Shows Dow Jones Industrial Average at 2,184.75.

STANDARD AND POORS

Table with columns for Date, Index Value, High, Low, and Change. Shows S&P 500 at 100.87.

NEW YORK Stock market table listing various stocks like Abbott Labs, Amstar, and their prices.

Stock market table listing various stocks like Revlon, Weyerhaeuser, and their prices.

Stock market table listing various stocks like Woodworth, Wm. Wrigley, and their prices.

MONTEREAL and JOHANNESBURG stock market tables listing local market activity.

NEW YORK Stock market table (continued) listing more stocks like American Airlines, and their prices.

Stock market table (continued) listing more stocks like Canadian National, and their prices.

Stock market table (continued) listing more stocks like Canadian National, and their prices.

MONDAY'S ACTIVE STOCKS table listing active stocks and their price movements.

EUROPEAN OPTIONS EXCHANGE table listing options contracts for various European markets.

BASE LENDING RATES table listing interest rates for various banks and currencies.

AMSTERDAM and BRUSSELS/LUXEMBOURG stock market tables listing European market activity.

STOCKHOLM, OSLO, JOHANNESBURG, and PARIS stock market tables listing international market activity.

Handwritten notes and signatures at the bottom of the page, including a signature in Arabic script.

FINANCIAL TIMES SURVEY

Wednesday February 28 1979

Industry looks for higher prices

by Hazel Duffy
Industrial Correspondent

OVER THE past four years, the European bearings industry has been suffering as a result of the long recession in manufacturing industry. This has been aggravated by surplus capacity, drought about partly because of depressed demand from customer industries, but also by the intense competition, from the Japanese and others.

In some European markets, notably the UK and France, the prospects for any substantial improvement remain poor. But in other markets, particularly Germany, the climb out of recession has been more marked, and demand for bearings is picking up. At the same time, competition from Japanese sources has lessened because of the appreciating yen, and the effects of rationalisation in the bearings industry reflect closely the pattern in manufacturing industry as a whole. About 30 per cent of output goes to the automotive industry (higher for the specialised products), which means that virtually all bearings manufacturers are very dependent on the situation in industry. The general bearing industry takes another 15 per cent, followed by machine tools, aerospace and consumer durables. Competition among bearings manufacturers has been intense many years; it tends to be product where customers go to the cheapest source—particularly in the automotive and consumer durables industries, price of the finished product is all-important.

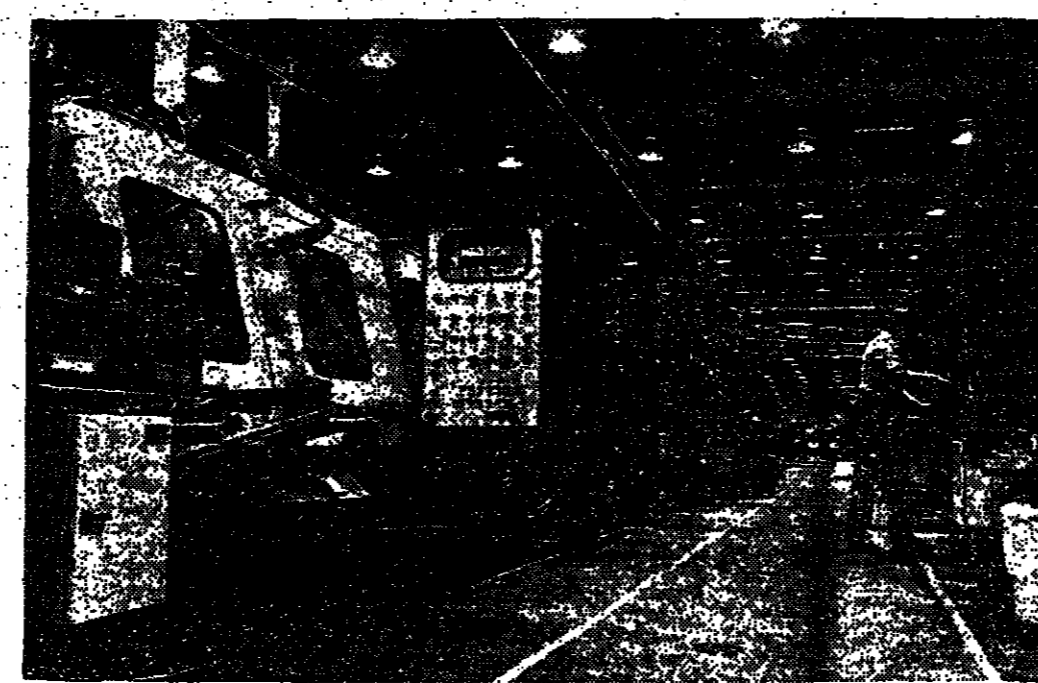
The Japanese push started in the late 1960s, but their presence became felt in full strength with the recession that followed the 1973 oil crisis. The

European manufacturers took some time in deciding how to react to this challenge; they decided finally that an anti-dumping action under the EEC rules was the best solution.

The Japanese have always rejected this allegation which resulted in the European Commission imposing a provisional holding on Japanese imports. But some 18 months ago, the Japanese gave an undertaking to put their prices up by 20 per cent. The European companies agree that the Japanese have stuck to this agreement—although they suggest that prices have not been increased by the full amount of the yen appreciation. The Japanese companies took their case to the European Court in Luxembourg in January. The verdict of the full court is still pending, but the Advocate General recently came out with his recommendation that the 15 per cent suspended anti-dumping duty should be declared void.

Quite apart from Japanese competition, the dominant problem for the industry over the past three years has been lack of demand. Nobody could have predicted with accuracy the extent of the recession which followed 1973, but the bearings manufacturers were caught out badly.

Although there had been a certain amount of rationalisation—and in the case of the UK there had been a regrouping of the big British-owned companies—it had not gone far enough to deal with the scale of the recession that followed. SKF, for example, had chosen at about that time to start implementing a European-wide marketing and planning operation. SKF production of certain types of bearings is



Linked lines of bore grinders for bearing inner ring grinding at SKF's factory in Gothenburg, Sweden.

now concentrated on particular plants, while the factories are loaded according to demand and capacity, again on a European rather than an individual country basis.

A computerised centre has been set up in Brussels to co-ordinate the scheme. But its real benefits will not show up until demand improves and the plants come closer to capacity production. SKF's problem areas in Europe are France and the UK. In order to bring the latter into profit by 1981, SKF announced recently that it is concentrating all its bearings

production in one factory, leading to the loss of 600 jobs at its factory in Scotland. In Germany, where SKF has a strong competitor in FAG, it has been more successful. Its experience in Italy has also been more encouraging than in France and the UK.

FAG (Kugelfischer Georg Schäfer is its full name) is the second biggest bearings company in Europe. Based at Schweinfurt, the group has manufacturing and marketing facilities on a worldwide basis, and also exports nearly half of its German production.

In 1977, it increased profitability in spite of the difficult economic circumstances. Sales of the German companies in 1977 increased by 6.5 per cent, although worldwide the growth was only 2.7 per cent. Last year proved more difficult, however, and turnover is not expected to be above the 1977 level. Export from the German companies decreased slightly. FAG has also been increasing slightly its employment—in 1977 it totalled 23,867 throughout the group—but this was due mainly to increased activity in its other companies making

BEARINGS

The recent past has not been a happy time for the European bearings industry, which has been faced with low demand for its products and competition from cheaper imports. There are signs that a recovery is under way, though this is likely to be slower in the UK than in other West European countries.

| TOTAL | IMPORTS | | EXPORTS | |
|----------|---------|---|--------------|------|
| | £m. | % | £m. | % |
| of which | | | | |
| Germany | 29.7 | | France | 9.5 |
| U.S. | 14.1 | | Germany | 8.8 |
| Japan | 9.4 | | Italy | 7.2 |
| France | 9.2 | | U.S. | 5.5 |
| Sweden | 6.4 | | Sweden | 4.9 |
| Italy | 5.3 | | South Africa | 4.4 |
| Poland | 0.9 | | Spain | 3.8 |
| Others | 10.5 | | Others | 36.7 |

hydraulic brake parts and grind-view taken was that this was the only way to keep factories running at an economic level, although it has still been necessary to close down factories for short periods. This all added up to prices being very depressed in the high-volume sectors of the industry.

Over the past year or so, however, prices have been rising as companies took advantage of the small improvement in demand. In some markets, for example the UK, where the motor industry has had serious problems, this has been a more difficult exercise. But the signs are that the leading companies will continue to pursue a policy of higher prices wherever possible, and accept that they might have to lose market share as a result. The effect of the low prices policy has been reflected in the poor financial results of much of the industry.

A growing threat to maintaining price increases, however, comes from Eastern Europe. Initially concentrating on the replacement market, the East Europeans are moving more into supplying original equipment manufacturers with their bear-

ing requirements, and at prices, say the European bearing companies, which are sometimes as much as 30 per cent below the prices that they are charging. The markets where the East Europeans have been particularly successful are the UK, France and Spain, which are those that seem to be the most price sensitive. The countries which are the strongest in the East European export league are Poland, the Soviet Union and Czechoslovakia.

Companies used to take comfort from the fact that East European bearings were of a lower quality, but this is becoming less apparent now. Some manufacturers have been pressing for an investigation on dumping to be taken up along the lines of that against the Japanese, but it may be difficult to reach a European consensus on such action, as the damage is more localised than that done by the Japanese.

Bearings are a mature product. They can be improved upon, and all the major companies spend considerable amounts on development. The American subsidiary of General Motors, New Departure-Hyatt, claims its new integral ball-bearing spindle for fitting in front-wheel-drive cars constitutes a radical innovation in design. But it seems unlikely that there is going to be a breakthrough in the design of high-volume bearings. In this area, rationalisation of variant and productivity improvement, coupled with higher prices, are the only way out of the present malaise affecting large sectors of the industry.

Mainly for this reason, diversification among bearings manufacturers is gathering speed. Although bearings are still the dominant product for all the main groups, the growth in non-bearing products has been greater than for bearings, and these propositions could change significantly over the next few years.

Companies' policy on diversification varies—SKF, for example, has been expanding in cutting tools, which is a logical addition to its special steel activities. Timken is heavily involved in other alloy steel products, which provide over a quarter of net sales, while FAG is engaged in a variety of related activities. With the outlook for manufacturing industry in Europe promising little in the way of growth for bearings, diversification into other branches of engineering provides a logical solution.

There had to be a better way

In manufacturing industry, there can be few more obvious ways of wasting money than turning tons of very expensive steel into swarf. And yet in bearing manufacture this is precisely what happens, day in, day out, all over the world.

When you consider that up to 40% of the total cost of a finished ball bearing is represented by raw material costs, and that between 20% and 50% of this raw

material, usually top grade chromium-carbon steel in tubular forms, is sold as largely worthless scrap, you must surely agree: there has to be a better way of making ball bearings.

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BEARINGS III

The U.S.

Record of steady growth

ALL AND roller bearings manufacture in the U.S. is an analogue for many other American industries these days. U.S. shipments have enjoyed steady but unspectacular growth over the last six years, some of the principal names are subsidiaries of larger corporations, product development has been fit about adequate and some of its basic markets have been all penetrated by imports, particularly from Japan.

The growth in total shipments has been at an annual compounded rate of 8.4 per cent since 1973 and, according to the U.S. Department of Commerce, they were worth \$2.5bn last year, 7 per cent more than the year before. The department is projecting a similar rise in value for 1979, which may not be far off the mark even if the economic downturn predicted by many private economists actually occurs. Though not immune from cyclical trends, about 75 per cent of total shipments go to original equipment manufacturers and the balance in replacement supplies to the so-called after-markets. A decline in the fortunes of the automotive industry will be more than set by the strength of demand from the railway equipment and capital goods sectors. With the outlook for U.S. production so uncertain, the department has switched to distant dollars when making longer-term forecasts for the industry's shipments, which are expected to grow at a compound average rate of 2 per cent until '83.

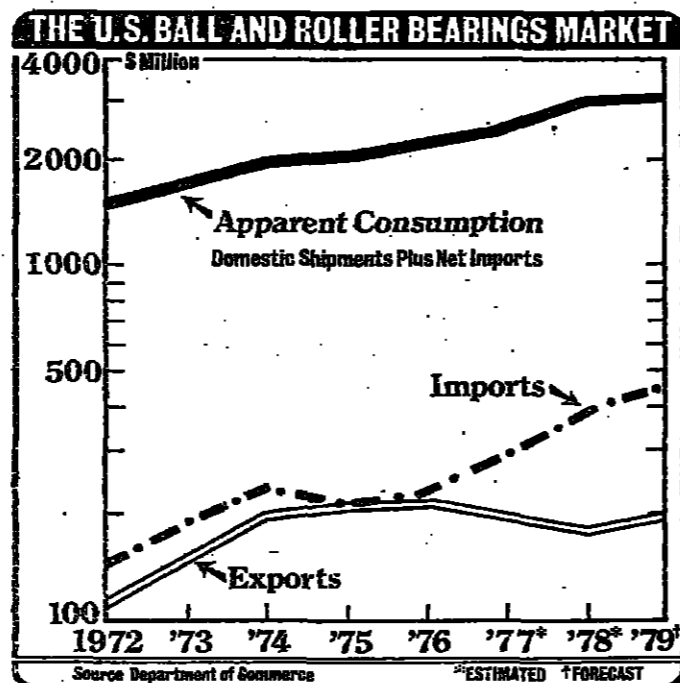
Behind these figures are a

number of companies which are expressing themselves satisfied with market prospects and the achievements of the past year. One of the most successful, Timken, based in Ohio, has built a dominant position worldwide in the manufacture and marketing of tapered-roller bearings.

Largest

With its 1978 sales expected to have exceeded \$1.1bn, Timken is by far the largest U.S. bearings manufacturer. In the last ten years, its sales have more than tripled and although falling margins have not brought a fully equivalent growth in earnings, Timken is generally credited with a management shrewdness which has enabled it to beat off a series of competitive challenges. Its hold on nearly 85 per cent of the U.S. market for tapered-roller bearings is based on sound technology. Timken has one of the industry's two large research and development departments) and the advantages of an integrated manufacturing operation from which the company supplies almost all its own steel requirements. Strong complaints from Timken prompted U.S. Government restrictions in the early 1970s against cut-price imports of tapered-roller bearings from Japan. Among smaller domestic U.S. companies, Torrington, a subsidiary of Ingersoll Rand, and Brenco (sales \$50m plus) are credited with keeping Timken on its competitive toes.

But its strength in a wide number of markets—automotive, rail equipment and capital



goods—is generally seen as providing a cushion against the economic cycle which is further augmented by highly-profitable operations overseas, principally in Britain, France and Brazil. Altogether these provide about 26 per cent of the company's pre-tax income.

Some analysts believe that a proportion of Timken's business with the automotive industry may be threatened by a new development made by New Departure-Hyatt, General Motors bearings manufacturing

subsidiary. GM does not reveal what proportion of its total requirement is drawn from its oddly-named subsidiary, formed from a combination of two companies in 1965. However, accompanying the automotive giant's plans to produce an increasing number of four-wheel drive cars has been a new departure—Hyatt's recent announcement of an integral ball bearing spindle specifically designed to be fitted to front-wheel drive cars.

New Departure-Hyatt has hailed its creation as a "revolutionary product" following eight years of engineering development and millions of

miles of testing. The company says that its spindle is a totally integrated assembly to replace the tapered-roller bearing and is pre-adjusted, pre-lubricated and sealed. The company also claims that the spindle will reduce the weight of the wheel mounting, improve durability, reduce rolling friction and eliminate the need for adjustment. After allowing for hyperbole, there seems little doubt that it has developed a component which is going to be of considerable interest to General Motors' rivals and which may lead to rival versions from other bearings manufacturers.

One, SKF Industries, the North American subsidiary of AB SKF of Sweden, claims that it developed an integral spindle for automotive use before the General Motors company. At the moment SKF in Europe is trying to sell the spindle to a number of European manufacturers of front-wheel drive cars.

SKF Industries has been established in the U.S. since 1908 and now has six manufacturing plants and annual sales of almost the full range of SKF bearings, worth about \$250m. In the last ten years acquisition by SKF of two smaller U.S. companies, Tyson and Nice, has attracted the opposition of the Federal Trade Commission, which also took exception to a marketing arrangement between SKF and Federal Mogul which draws about half of its \$560m annual sales from bearing manufacturers. Part of the arrangement between the two companies involved SKF supplying Federal Mogul with tapered-roller bearings after the latter had decided to cease manufacturing them. Following a recent court decision, SKF so far has

won its case for retaining Tyson and Nice, but the SKF-Federal Mogul was declared improper. SKF is appealing against this decision while the commission is pressing ahead through an appeal to try to force the sale of Nice.

Swelled

Since 1970, the ranks of foreign bearings companies manufacturing in the U.S. have been swelled by the addition of three Japanese companies: NTN, which is in Chicago; Koyo Seiko, which has a plant in South Carolina; and NSK. West Germany's FAG also has a U.S. plant, in Joplin, Missouri. Nevertheless, foreign companies are importing far more bearings into the U.S. than they are manufacturing locally and their impact has been felt most keenly in the market for small-sized bearings.

A number of companies, including New Departure-Hyatt and Fafnir, a subsidiary of Textron Inc., came under some pressure from imports in the early 1970s, but the imposition of special duties on certain products reduced the growth in value of imports between 1973 and 1977 from \$354m to \$287m. Last year, however, the removal of the special duties was followed by a leap in imports to \$390m, or 14 per cent of total shipments. The Department of Commerce anticipates a further 15 per cent growth, to \$450m, in the value of imports this year. However, these gross figures mask the fact that imports have captured as much as 30 per cent of the market for some categories of small bearings.

John Wyles

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 - A. G. Packaged Sprockets and Pulley Idlers
 - KAYDON Real-Slim Bearings
 - KILIAN Unground Ball Bearings
 - ASAHI Pillow Blocks and Flange Units and Single Revolution Clutches
 - N.B. Linear Ball Bushings
 - HESS BRIGHT Ball and Roller Bearings
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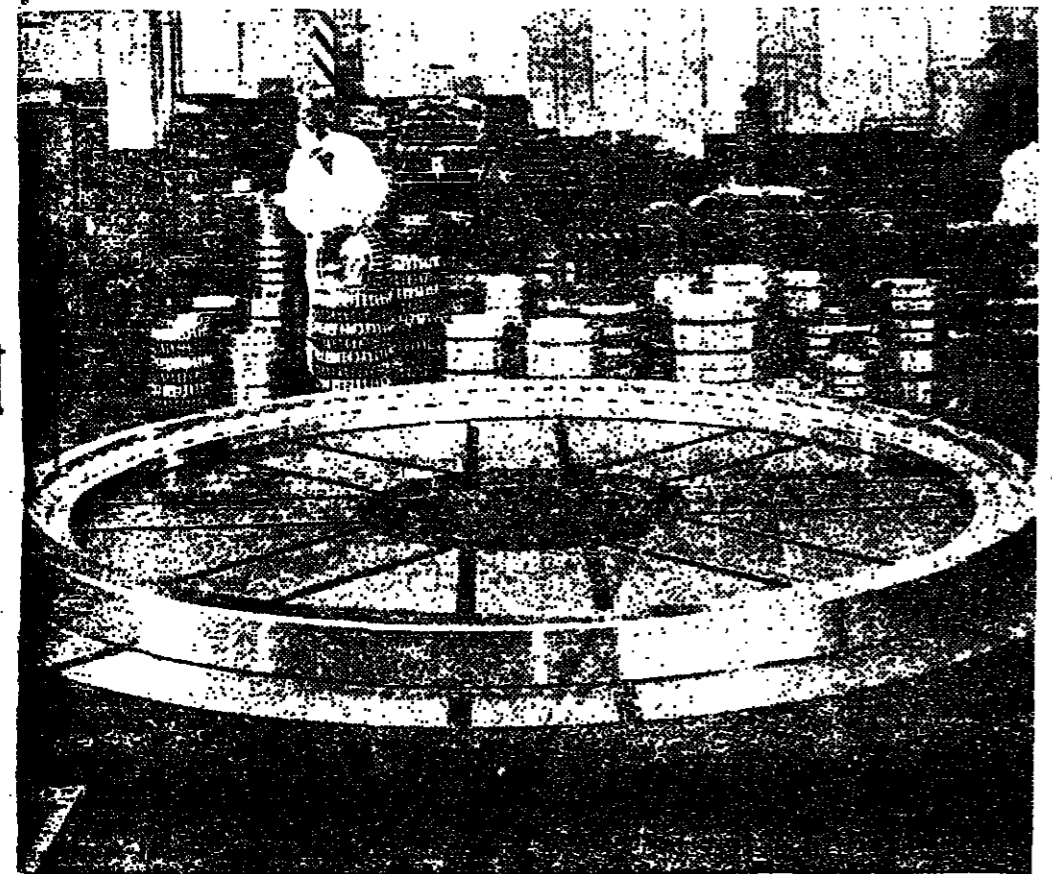
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crossed roller bearing with an outside diameter of 111 inches, the largest manufactured by British Timken.

Deficit

CONTINUED FROM PREVIOUS PAGE

of the ground we have says an industry economist. "But there is no doubt that we have gone through a difficult patch and the sales of the big companies are very negative."

During the past three years, in fact, the industry has not increased its turnover fast enough to keep pace with inflation. Between 1976 and 1977 it went up by only about 8 per cent, from FFr 1.6bn to FFr 1.74bn.

Tonnage output moved up sharply in these years, from 43,000 tonnes to 47,000, thus illustrating the main French anxiety about prices: the increased volume is not leading to increased turnover and profits.

The French bearings manufacturers—like most of the engineering sector—have made efforts to make up for these difficulties in recent years by selling more overseas. But they have not been quite able to match the increasing pressure from importers.

In 1975, for example, the French managed a positive balance on their bearings trade, selling FFr 722m overseas and importing products worth FFr 700m. A much poorer performance in 1976, when exports slipped from 26,000 to 23,000 tonnes, saw trade dipping deeply into deficit, with FFr 822m of imports against FFr 735m of exports. There was a slight recovery last year, but the negative balance remained, with imports at FFr 845m against exports of FFr 822m.

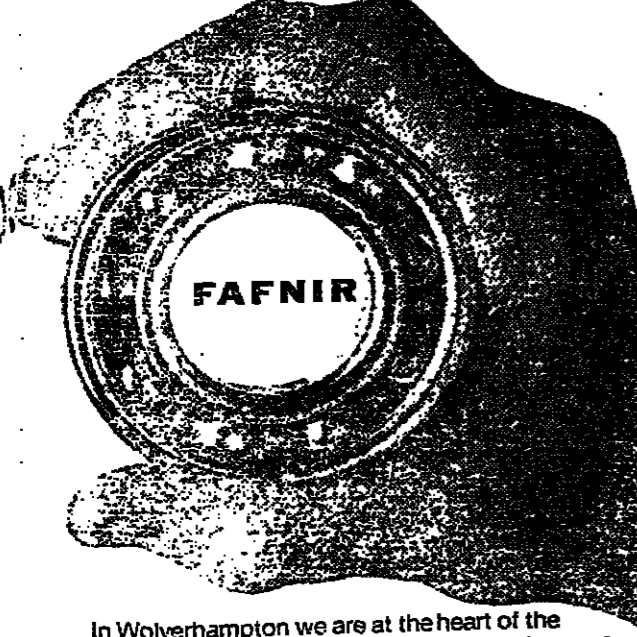
Among these exports, the French note that they make virtually no impression on Japan: sales to Japan in 1975 amounted to FFr 978,000 and 36 tonnes. By 1977 they had slipped to 5 tonnes worth FFr 49,000.

Given the present outlook for French industry, which seems to be heading for a slight upswing this year, the bearings manufacturers feel they have some hope of achieving an improvement. But they insist that expansion can only be successful if accompanied by satisfactory pricing policies based on fair competition.

The industry argues that it has done a great deal to rationalise itself in recent years and develop the sort of international profile which the Government seeks in its industrial policy. It now feels that this needs to be backed up by measures to put it on a safer footing in competition with its overseas rivals.

Terry Dodsworth

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Companies and Markets

COMMODITIES AND AGRICULTURE

GLC boost for world commodity centre

By JOHN EDWARDS, COMMODITIES EDITOR

THE GOVERNMENT is expected to announce a decision this week on the financial support it is prepared to give for World Commodities Centre in London.

At present the MCA subsidy on replacer pellets sent from Germany to the UK—generally a mixture of manioc and protein ingredients—is worth up to £32 a tonne.

France wins manioc battle

By CHRISTOPHER PARKES

FRANCE HAS won a major title in its campaign to cut common Market use of cereal substitutes in animal feeds.

At present the MCA subsidy on replacer pellets sent from Germany to the UK—generally a mixture of manioc and protein ingredients—is worth up to £32 a tonne.

Record tea crop in India

By K. K. SHARMA IN NEW DELHI

TEA PRODUCTION in India during 1978 reached a record 571.1m kilos, an increase of 10.3m over the previous year, according to the United Planters' Association of Southern India.

There was also an impressive increase of 11.3m kilos in North India where output reached 440.9m kilos.

Stockpile sales bill planned

By Our Commodities Staff

Washington—Legislation authorising the sale of raw materials from the U.S. strategic stockpile will be introduced in Congress possibly by Friday, according to Administration officials.

UK FISHING INDUSTRY Plea to restrain fleet expansion

By RICHARD MOONEY

THE GOVERNMENT should take steps to curb the uncontrolled expansion of the UK fishing fleet's catching capacity, Mr. Charles Meek, chairman of the White Fish Authority, said in London yesterday.

work for the eventual introduction of a restrictive licensing system, would make owners think twice about ordering new vessels since it would imply a preference for vessels already in the fleet.

NZ offered cheese quota

By CHRISTOPHER PARKES

COMMON MARKET negotiators involved in international trade talks in Geneva have been authorised to offer New Zealand access to the British market for between 7,000 and 8,000 tonnes of cheddar cheese a year.

Indian jute settlement will raise costs

By Our Own Correspondent

THE 48-DAY-OLD jute strike—the longest in the Indian industry's recent history—which has just been called off, has cost the industry 185,000 tonnes of jute goods in production.

Colombian coffee prices adjusted

By Our Commodities Staff

COLOMBIA HAS lowered internal coffee prices and taxes. The buying price is down 12 per cent, while the retention tax is reduced from 80 per cent to 45 per cent.

New Zealand delegates at the talks of the General Agreement on Tariffs and Trade, are asking to be allowed to send 20,000 tonnes annually.

Meanwhile, Mr. John Silkin, UK Minister of Agriculture, has written to British food and farming industry lobbyists telling them he intends to stand by New Zealand's claim to continue selling dairy produce in the British market.

Mr. K. K. Kanoria, chairman of the Indian Jute Mills Association, has said that the Indian jute market will soon become uncompetitive unless it is subsidised by the Government.

BRITISH COMMODITY MARKETS

Table with columns for various commodities like Tin, Zinc, Lead, and their prices in London. Includes sub-sections for Tin, Zinc, and Lead.

Table with columns for various commodities like Aluminium, Copper, and their prices in London. Includes sub-sections for Aluminium and Copper.

Table with columns for various commodities like Soybean Meal, Coffee, and their prices in London. Includes sub-sections for Soybean Meal and Coffee.

PRICE CHANGES

Table showing price changes for various commodities in New York, Feb. 27, 1979. Includes sub-sections for Metals, Grains, and Other.

AMERICAN MARKETS

Table showing American market prices for various commodities like Copper, Tin, and Lead. Includes sub-sections for Metals and Grains.

Monday's closing prices

Table showing Monday's closing prices for various commodities like Cotton, Sugar, and Wheat. Includes sub-sections for Grains and Other.

EUROPEAN MARKETS

Table showing European market prices for various commodities like Wheat, Sugar, and Coffee. Includes sub-sections for Grains and Other.

Index Limited 01-351 3466. Nov-Dec Rubber 67.68-5.5. Lamont Road, London SW10 0HS.

CORAL INDEX: Code 478-481. Insurance Base Rates: Property Growth 13%, Vanbrugh Guaranteed 11.25%.

Metals are moving! Are you? THERE'S NEVER BEEN A BETTER TIME for re-appraisal.

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C.C.S.I. Commodities Ltd. WALSHINGHAM HOUSE, 35 SEETHING LANE, LONDON EC3N 4AB. TELEPHONE: 01-480 6841

PERSONAL: IDE EXCHANGE. Art-filled 3 bedroom in Westcott. Clubs: EVC 189, Robert Street, 724 0587. SUGAR: LONDON DAILY PRICE (raw sugar) 1100.00 (109.00) a tonne off for Feb-March shipment.

SILVER: Silver was fixed 13.7p an ounce lower for spot delivery in the London bullion market yesterday at 370.5p.

COCOA: Cocoa futures traded within a narrow range throughout the session but fell to close marginally lower than last night's levels, report GFI and Duffus.

GRAINS: WHEAT—Wheat CWRS No. 1, 13p per cent, unquoted. U.S. 13p.

MEAT/VEGETABLES: MEAT COMMISSION—Average fatback prices at representative markets on February 27.

COTTON: LIVERPOOL COTTON—Spot and shipment rates in Liverpool amounted to 72 tonnes.

JUTE: JUTE—L24, MWD L38, BTD L27, BTD L24.

INDICES: FINANCIAL TIMES: Feb. 28th 207.27, 261.61, 228.22.

PERSONAL: IDE EXCHANGE. Art-filled 3 bedroom in Westcott. Clubs: EVC 189, Robert Street, 724 0587.

SUGAR: LONDON DAILY PRICE (raw sugar) 1100.00 (109.00) a tonne off for Feb-March shipment.

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Companies and Markets

LONDON STOCK EXCHANGE

Boom conditions prevail as Government stocks rise £3 and equity share index advances 10.8 to 479.6

Account Dealing Dates Option First Declared Last Account Dealings Dealings Day Feb. 12 Feb. 22 Mar. 6 Feb. 26 Mar. 8 Mar. 9 Mar. 20 Mar. 12 Mar. 23 Mar. 23 Apr. 3

trage sources, however, the premium eased to close at 91 1/2 per cent for a fall of 1 1/2. Yesterday's SE conversion factor was 0.8699 (0.3881).

dealings. In the leaders, Associated Dairies stood out at 220p, up 14, while Rowntree Mackintosh added 13 to 388p.

They were firm with London and Provincial, 192p. More O'Ferrill, 57p, and Mills and Allen, 54 1/2p, all rising around 5.

Gold prices were also wanted and put on 3 to a 1978/79 peak of 37p.

FINANCIAL TIMES STOCK INDICES Table with columns for Govt. Sec., Fixed Interest, Industrial, Gold Mines, etc.

HIGHS AND LOWS S.E. ACTIVITY Table with columns for High, Low, High, Low, Daily, etc.

NEW HIGHS AND LOWS FOR 1978/9 Table with columns for Share, New Highs, and Low for 1978/79.

APPOINTMENTS

Two new Board posts at RHM

Mr. R. F. Lister and Mr. S. G. Metcalfe have been appointed directors of RANKS HOVIS MC DOUGALL.

LONDON TRADED OPTIONS

Table with columns for Option, Ex'se, Closing offer, Vol., etc.

RECENT ISSUES

EQUITIES

Table with columns for Issue, Amount, Price, etc.

FIXED INTEREST STOCKS

Table with columns for Issue, Amount, Price, etc.

"RIGHTS" OFFERS

Table with columns for Issue, Price, etc.

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FT-ACTUARIES SHARE INDICES

These indices are the joint compilation of the Financial Times, the Institute of Actuaries and the Faculty of Actuaries

Table with columns for EQUITY GROUPS & SUB-SECTIONS, EQUITY SHARES, and FIXED INTEREST PRICE INDICES.

AUTHORISED UNIT TRUSTS

Table of authorized unit trusts including Abbey Unit Tr. Mgrs., Allied Nations Group, and various international and domestic funds.

Table of insurance and property bonds including Abbey Life Assurance, British Life Assurance, and various international life insurance companies.

Table of insurance and property bonds (continued) including Crown Life Assurance, London & Lancashire, and various international life insurance companies.

Table of offshore and overseas funds including Alexander Fund, Allen Harvey & Reed Int'l Mgt., and various international investment funds.

Notes section containing legal disclaimers and additional information regarding the funds listed.

INDUSTRIALS—Continued

Table of industrial stocks including companies like British Petroleum, Shell, and ICI, with columns for stock price, change, and volume.

INSURANCE—Continued

Table of insurance stocks including companies like Royal Indemnity, Commercial Union, and London & Lancashire.

PROPERTY—Continued

Table of property stocks including companies like British Land, Commercial Union, and National Westminster.

INVESTMENT TRUSTS—Cont.

Table of investment trusts including companies like British Venture, British Investment, and British Venture.

FINANCE, LAND—Continued

Table of finance and land stocks including companies like British Venture, British Investment, and British Venture.

International Financier DAIWA SECURITIES. Includes sections for AUSTRALIAN, TINS, COPPER, MISCELLANEOUS, RUBBERS AND SISALS, TEAS, MINES, CENTRAL RAND, EASTERN RAND, FAR WEST RAND, O.F.S., FINANCE, DIAMOND AND PLATINUM, CENTRAL AFRICAN, and REGIONAL MARKETS.

INSURANCE

Table of insurance stocks including companies like Royal Indemnity, Commercial Union, and London & Lancashire.

PROPERTY

Table of property stocks including companies like British Land, Commercial Union, and National Westminster.

TRUSTS, FINANCE, LAND

Table of trusts, finance, and land stocks including companies like British Venture, British Investment, and British Venture.

FINANCE

Table of finance stocks including companies like British Venture, British Investment, and British Venture.

DIAMOND AND PLATINUM

Table of diamond and platinum stocks including companies like British Venture, British Investment, and British Venture.

REGIONAL MARKETS

Table of regional markets including various international stock exchanges and indices.

